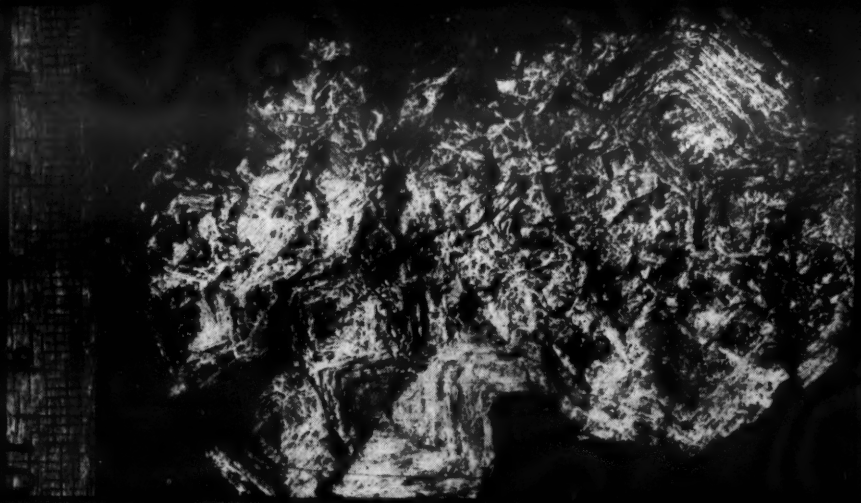

64th LIST OF FINE MINERALS

BRUCITE, Texas, Pa. Well xld. mass. 3 x 1½ x 1½	$3.50
STRUVERITE (Tantalian Rutile), Madagascar. Large rough xl. 2¼ x 1¾	2.50
SENARMONTITE, Algeria. Xld. in xlline. mass. 2½ x 2 x 2	3.00
CLAUDETITE, Imperial Co., Cal. Micro. xld. on Realgar. 2 x 1¾	2.50
TUNGSTITE, Bolivia. With Ferberite. 3 x 2 x 1½	3.00
RUTILE, Graves Mt., Ga. Brilliant 1¼" xl. on mass. 3 x 2½ x 2	7.50
METATORBERNITE, Cornwall. Large plates on rock. 2½ x 2½, Very fine.	10.00
CABRERITE, Laurium, Greece. Micro. xld. on matrix. 2 x 1½	3.50
HENWOODITE, Cornwall. Xld. spheres on rock. 3 x 2½. Very rare.	10.00
NICCOLITE, Eisleben. Thick plate with xld. surface. 2½ x 2¼	5.00
DELAFOSSITE, Bisbee. Minutely xld. on xld. Cuprite. 2½ x 2	5.00
AIKINITE, Ural Mts. Xlline. masses in white Quartz. 2½ x 2 x 1½	7.50
CHALCOPHYLLITE, Cornwall. Xld. in matrix. 2 x 1¾	3.50
AMBER, Baltic Sea. Fine irregular nodule polished all over. 3 x 2 x 2	15.00
GOLD, Romania. Beautifully micro. xld. on xld. Quartz. 2½ x 2	12.50
HOLLANDITE, Central India. Xlline. mass with some rock. 2½ x 2 x 2	2.00
GAHNITE, Charlemont, Mass. Greenish xls. on Quartz. 2½ x 2 x 2	2.50
AUTUNITE, Mt. Painter, S. Australia. Thick xld. plate. 2½ x 1¾. Very fine	12.50
BROCHANTITE, Bisbee. Mass of interlacing xls. 3 x 2½ x 1½	5.00
BERAUNITE v. ELEONORITE, Germany. Radiating xlline. in rock 2½x2¼	2.50
CHLOANTHITE, Saxony. Partly xld. with Niccolite. 2 x 2	3.50
BAYLDONITE, Tsumeb. Green coating on xld. Anglesite ps. Cerussite. 2 x 2	5.00
ALLEMONTITE, Atlin. B.C. Fine mammillary mass. 3 x 2½	7.50
QUISQUEITE, Peru. Lustrous black mass. 2½ x 2 x 1½	3.50
LIBETHENITE, Libethen. Well xld. on matrix. 2 x 2½	5.00
PERCYLITE, Chile. Xlline. masses w. some micro. xls. in rock. 3 x 2	5.00
CLINOCLASITE, Cornwall. Small xls. densely coating matrix. 3 x 2. Fine.	12.50
ERINITE, Tintic, Utah. Minutely mammillary on matrix. 2½ x 2½	5.00
CRYOLITE, Greenland. Well xld. on xlline. mass. 2½ x 2½	3.50
IRON, Germany. In Basalt. 3 x 2. (11 oz.) Small face polished.	10.00
HAUSMANNITE, Sweden. ½" xl. in matrix. 2½ x 2.	2.00
APATITE, Maine. Numerous pale lilac xls. w. HERDERITE xls. 2½ x 2½	7.50
GRUENLINGITE, Cumberland. Xlline. mass in Quartz. 2½ x 2. Very rare	5.00
LEIGHTONITE, Chile. Xld. on rock. 2½ x 1¾.	5.00
WAGNERITE, Salzburg. Large pinkish xls. in matrix. 2½ x 2	4.00
BISMUTHINITE, Cornwall. Acicular xls. in cavernous Quartz. 2½ x 1	3.50
TRUSCOTTITE (GYROLITE), Sumatra. Xlline. mass. 2½ x 2 x 1½	5.00
TARBUTTITE, Rhodesia. Finely xld. in limonitic matrix. 2½ x 2	5.00
ATACAMITE, Chile. Xlline. aggregate. 2½ x 2½ x 2	6.00
FRANCKEITE, Bolivia. Xlline. mass. 2½ x 2	6.00
CHONDRODITE, Tilly Foster. Small gemmy xls. on matrix. 2½ x 1¼	3.00
CHALCOPYRITE, Japan. Group of large brilliant xls. 2½ x 2	3.50
DECHENITE, Carinthia. Micro. xld. on rock. 2 x 2	2.00
POLIANITE, Germany. Xld. on massive ore. 2½ x 1½	2.50
ARAGONITE, Hungary. Group of twin xls. both sides of specimen. 3 x 2.	3.50
PLUMBOFERRITE, Sweden. Xlline. in ore. 2 x 2½ x 1	3.50
GOETHITE, Cornwall. Finely xld. on mass. 3 x 2 x 2	3.50
OLIVENITE, Cornwall. Xld. & radiating fibrous mass on Quartz. 3 x 2½	6.00
SPINEL, Amity, New York. 1½" loose black xl. with some matrix	2.00
CASSITERITE, Galicia, Spain. 1½" turn xl. with curved faces	$5.00

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No list furnished, but inquiries for specific minerals welcomed.

ROCKS and MINERALS

PETER ZODAC, Editor and Publisher

America's Oldest and Most Versatile Magazine for the Mineralogist, Geologist, Lapidary.

Published Bi-Monthly

OFFICIAL JOURNAL

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CHIPS FROM THE QUARRY

MERRY CHRISTMAS! — HAPPY NEW YEAR!

The Editor extends to each and every one of our subscribers advertisers, readers and friends, a Merry Christmas and a Happy New Year. May 1956 prosper each and everyone of you abundantly, socially and financially is our sincere wish.

Attention Subscribers

When you send in a change of address, please let us have your old address also. It helps us in locating your name in our files.

Loaded down with rocks!

Editor R & M:

Please find $3.00 enclosed for our renewal to R & M. We have just returned from our annual western trip—as usual we come loaded down with rocks, have several specimens of sand which we will send you in a day or so. You will know by now that we have organized a gem and mineral club, some forty interested members. We were delighted to find so many interested in this locality so lacking in minerals.

George C. Barclay
Box 433
Newport News, Va.

Oct. 27, 1955

Picture on the cover

The picture on the cover of this issue was sent us by Peter Th. Arnold, Hansastre, 56, Hamburg 13, Germany. In his letter, dated Oct. 9, 1955, Mr. Arnold wrote:

"Enclosed you will find a photograph of an outstanding crystal group of uraninite altering to rutherfordine from the pegmatite at Luwengule, Morogoro, Uluguru Mountains, East Africa, belonging to my collection. If you are interested in its reproduction on the front cover of ROCKS AND MINERALS I would be only too glad to have you do this since many collectors missing that specimen in their collections might find it a unique thing. I would be interested in learning their reactions to it."

ATTENTION SUBSCRIBERS!

ROCKS and MINERALS comes out once every two months as follows:

Jan. - Feb., out about	Feb. 20
March - April, out about	April 20
May - June, out about	June 20
July - August, out about	Aug. 20
Sept. - Oct., out about	Oct. 20
Nov. - Dec., out about	Dec. 20

Biggest Little Bargain!

Editor R & M:

Please renew my subscription to R & M for another year. I think R & M is the "Biggest little Bargain" for my money. I am only a Junior "rockhound", (11yrs.) and my collection is as yet not too large, but I'm "keeping it up".

Robert Methot
5 Sylvandale Road.
Jewett City, Conn.

Sept. 27, 1955

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93 replies to 1 swap ad!

Editor R & M:

On page 496, Sept.-Oct. R & M, under heading "What one exchange can do." Mr. & Mrs. De Laughter received 42 answers from their swap ad in May-June issue of R & M. My swap ad in Mar.-April R & M has to date brought in 93 replies and the end is not in sight (have 5 at present to send boxes to). This is without counting the R.H's I've traded 263 times with. H. E. Chelf's article on page 482, Sept.-Oct. R & M about visiting Upper Mich. and visiting with me. I traded Chelf out of a 12" geode that is front and center in my collection. He also mentioned pyrolusite. I have a couple bushels of it if any of the R.H. readers of R & M are interested in making a trade. This includes the Editor if he'd like a specimen too.

R. Schenk
R. I., Box 71
Republic, Mich.

Oct. 26, 1955

The Garnet Deposit Near Wrangell, Alaska

J. R. Houston, Winslow, Maine

Introduction

Location

One of the most famous garnet deposits in the world is located near the mouth of the Stikine river about 7½ miles north of the town of Wrangell in southeastern Alaska (figs. 1, 2, and 3). From Wrangell the locality can be easily reached in a small boat equipped with an outboard motor. The time of arrival and departure should coincide as nearly as possible with high tide, otherwise it may be impossible to reach the shore even in a small rowboat because the mouth of the Stikine is very shallow at this point and wide mud flats are exposed at low water. The deposit lies 700 to 1000 feet from tidewater between the two branches of Garnet creek, a small stream flowing down the west side of Garnet mountain and into the mouth of the Stikine about three-fourths of a mile south of Point Rothsay (fig. 3).

Wrangell can be easily reached by air from Ketchikan, a fishing and lumber town located 85 miles to the south (fig. 2). Ellis Airlines and Alaska Coastal Airlines furnish daily service over this route. Pan American World Airways have daily flights from Seattle, Washington to Ketchikan. Or the trip to Wrangell can be made by boats of the Canadian Pacific Steamship Lines from Vancouver, British Columbia. This trip takes about three days. Some of the Summer tourist boats going on to Juneau and points north stop in Wrangell for as long as six hours, but this does not give sufficient time for a trip to the garnet deposits. It is best to allow at least a day for the visit.

Climate and Topography

The climate in this area is characterized by relatively mild winters with temperatures rarely falling below 10°F at sea level. The summers are cool; temperatures rarely rise above 80°F. The maximum daily temperature averages about 65°F in July. Rainfall is moderately heavy averaging 80 to 90 inches per annum.

The Wrangell district is mountainous and very heavily timbered with hemlock and spruce. Locally the undergrowth of alder, devil's club, etc. is very thick and extremely hard to traverse. However, a well-defined trail leads from the beach to the garnet deposit.

History

Wrangell is a fishing and lumber town of approximately 1500 inhabitants. It was founded in 1834 by Lt. D. F. Zarembo, an official of the Russian American Company, who built Fort Dionysius on the present townsite (1), (6). The village was later named Fort Wrangell after Baron Ferdinand von Wrangell, chief manager of the Russian American Company from 1830 to 1835.

For a ten year period starting in 1867 when the United States purchased Alaska from Russia, U. S. soldiers were stationed at Fort Wrangell. The troops were withdrawn in 1877 to help put down the Nez Perce Indian uprising in Idaho (6). Since that time the town has been known as Wrangell by Alaskans. However, many mineralogical museums throughout the world still record the locality as "Fort Wrangell".

The date and circumstances of the discovery of the garnet deposit are unknown. Old time gold prospectors knew of its existence in the second half of the nineteenth century. Several claims were staked and patented early in the present century and sporadic attempts were made to mine abrasive garnet. No production data are available, but old workings indicate that only a small tonnage was mined.

Geology

Professor A. F. Buddington of Princeton University did reconnaissance geologic mapping in the Wrangell district in the early and middle nineteen twenties. The results of his work are contained in U. S. Geological Survey Bulletins 739 and 800 (2), (3).

The garnet deposits lie in what Buddington called the "Wrangell-Revillagigedo belt" of metamorphic rocks, a complex assemblage of schists, phyllites, and slates of Paleozoic and Mesozoic age lying along the western edge of the Coast Range batholith. These metamorphic rocks strike northwesterly and dip at moderate angles to the northeast. The rocks of the Coast Range batholith, which in this area average quartz diorite in composition and range from late Jurassic to early Tertiary in age, lie to the east of the metamorphic rocks.

In many places, especially near the boundaries of the big intrusive rock bodies, igneous and metamorphic contacts are very gradational. Schist slowly grades into gneiss and gneiss into quartz diorite or some related "igneous" rock There may be several gradations back and forth from quartz diorite to gneiss to schist. Migmatites, aplite, and pegmatite dikes are common in the vicinity of the contacts. Granitization is strongly indicated in many places. However, most of the smaller intrusive bodies have relatively sharp, typically igneous contacts. In the immediate mine area the contacts are fairly sharp and the quartz diorite shows little gneissic or schistose structure.

Professor C. T. Bressler of the University of Oregon made a detailed study of this deposit for the U. S. Geological

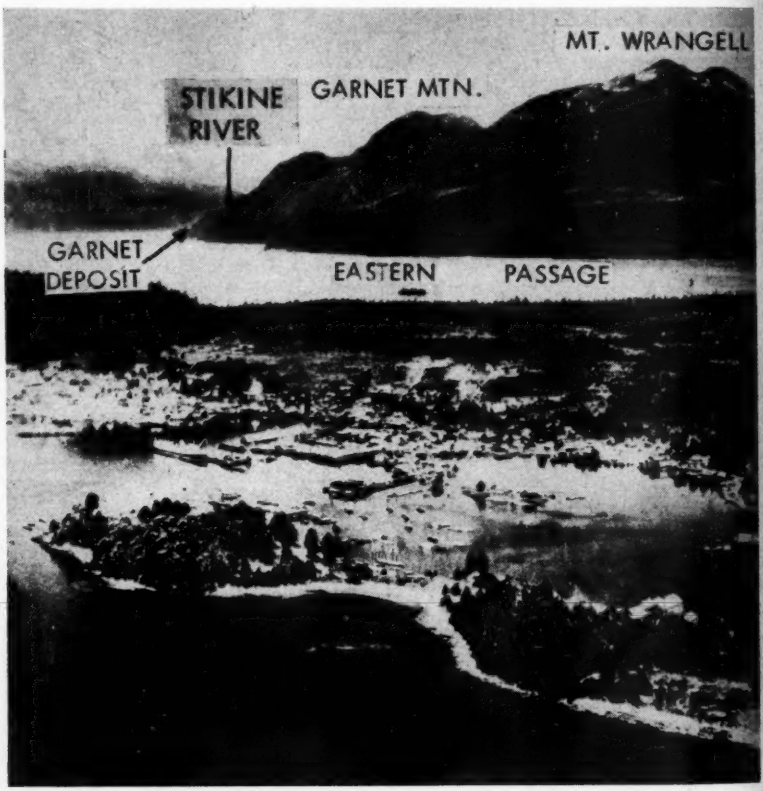

Fig. 1. Oblique aerial view of the town of Wrangell and the Wrangell garnet deposits.

Survey during the summer of 1946. His excellent geologic report on this work is contained in U. S. Geological Survey Bulletin 963-C which can be obtained for 30 cents from the Superintendent of Documents, Washington 25, D. C. (4). The

Fig. 2. Map of South-eastern Alaska showing general location of the Wrangell Garnet deposit.

report contains excellent large-scale geologic maps of the area surrounding the deposit and would be a great aid to any collector visiting this locality.

The highest grade part of the deposit lies in a quartz-biotite--garnet schist 10 to 200 feet from intrusive quartz diorite. It occupies a triangular-shaped area having a length of approximately 450 feet and a maximum width of about 250 feet. Small, local areas contain as much as 40% garnet, but old sample records indicate that the average garnet content of the schist is only about 5 percent. One petrographic thin section cut from a specimen collected during our visit in 1952 contained 8 percent garnet.

There is an old adit on the south branch of Garnet creek about 270 feet upstream from the place where the creek forks. Bressler states that there are 260 feet of underground workings here. We did not have time to investigate these workings, but there was really no need to (actually they may be caved at the present time). Plenty of good collecting material can be found along the banks and in the beds of either branch of Garnet creek. On weathered surfaces good garnet crystals can be detached from the inclosing schist very easily. But garnets that occur in fresh, unaltered schist usually cannot be detached from the rock in one piece. It is better to leave such specimens in the schist matrix.

Collectors will have no trouble finding plenty of good crystals. Large garnets occur in regular northwesterly-trending bands in the schist. One may traverse 50 to 100 feet of schist containing only small garnets less than 3/8" in diameter. Then a band of larger garnets will be encountered. I recall one iron-stained band of weathered schist approximately 2 feet wide located on the north branch of Garnet creek that must have contained at least 50% garnet by volume. The garnets ranged from 3/8" to 5/8" in greatest dimension and were located on either side of a clay seam about 2" wide. The largest garnets we found were located in the bed of the south branch of Garnet creek. Here good crystals 1" to 1¼" in greatest dimension occur in solid unweathered schist.

Garnet is the only mineral at this locality that would interest the average collector, although some collectors would undoubtedly want to obtain samples of the surrounding schist. This is a typical middle-grade schist containing small grains of quartz, biotite, muscovite, orthoclase, garnet, and graphite.

Crystallography, Physical Properties, and Chemical Composition of the Garnets

Almost invariably the garnets occur in well-formed crystals showing dodecahedron (110) and trapezohedron (211) faces (fig. 4). The largest crystals collected in 1952 had a maximum dimension of 1¾ inches. The crystals average ½ to 5/8 inches in greatest dimension.

Several years ago Professor Adolph Pabst of the University of California made a laboratory study of 133 Wrangell garnets of various sizes. He found that the dodecahedron faces becomes more prominent with an increase in crystal size and the trapezohedron faces become smaller. This phenomenon is illustrated in figure 4. The garnet crystals in this picture are approximately 1¼ inch, ¾ inch, and 7/16 inch in greatest dimension. The diamond-shaped dodecahedron faces are clearly more prominent on the larger crystals.

The ubiquitous presence of well-developed crystal faces is the outstanding feature of the Wrangell garnets. Unfortunately the crystals are always cracked just enough to make them unsuitable for gem use. Good quality gem and abrasive garnets occur in many parts of the world but there are few if any places where large garnets consistently occur in such perfect crystal form as they do at this famous locality.

The hardness of the Wrangell garnets averages about 7.5, based on Moh's scale. Their color is deep red. The specific gravity of five crystals, taken from different parts of the deposit in 1952 and ranging from ½ inch to 1 inch in greatest dimension, averaged 4.07. These measurements were made on whole crystals

Fig. 3. Sketch map of the Wrangell area showing the location of the Garnet deposit.

by use of a platform balance and a pail of water. Since many of the garnets contain quartz inclusions, this value is probably slightly lower than the true specific gravity. Index of refraction measurements on powdered material from five different crystals averaged 1.795 ± 0.003.

The following chemical analysis of Wrangell garnet was published in the old (1892) edition of Dana's System of

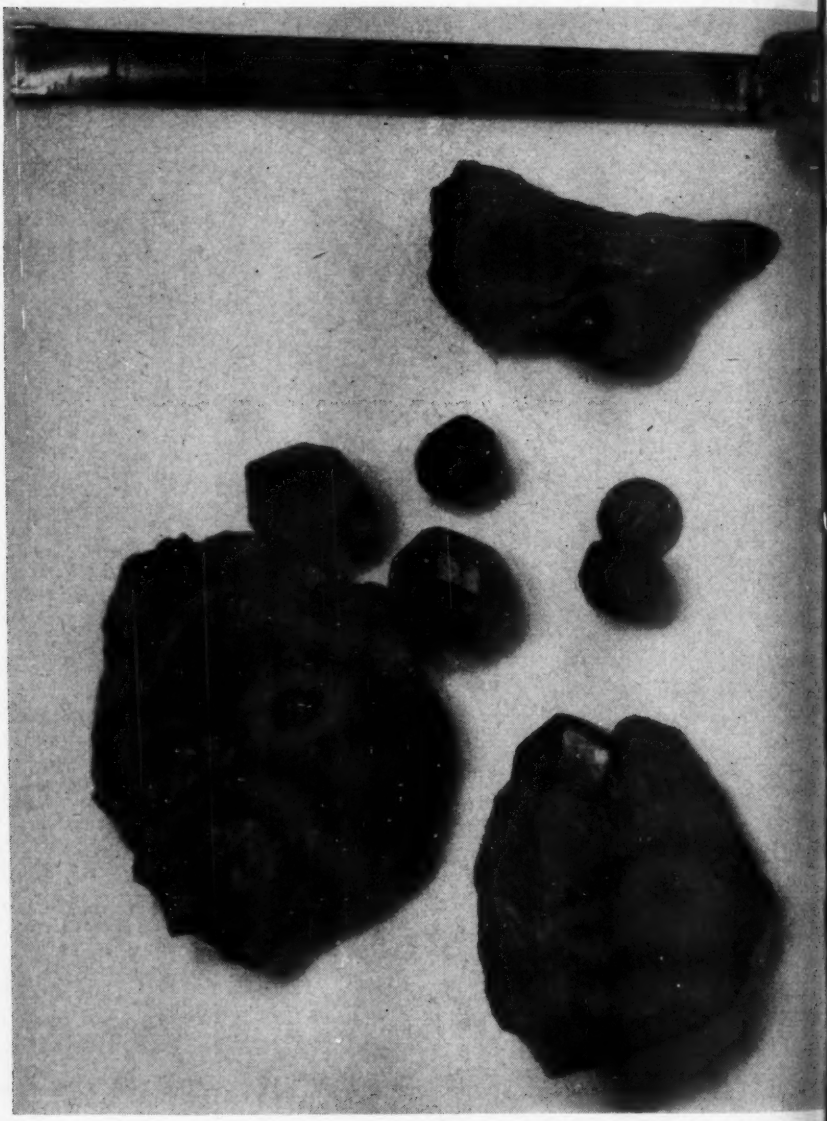

Fig. 4. Wrangell Garnets.

Mineralogy (5):

SiO_2	39.29	percent
Al_2O_3	21.70	"
Fe_2O_3	trace	"
FeO	30.82	"
MnO	1.51	"
MgO	5.26	"
CaO	1.99	"
Total	100.57	percent

The above data indicate that these garnets are essentially almandite, $Fe_3Al_2(SiO_4)_3$. The chemical analysis shows that some magnesium and smaller amounts of calcium and manganese have replaced part of the ferrous iron, so the complete chemical formula would be $(Fe, Mg, Ca, Mn)_3Al_2(SiO_4)_3$.

Origin of the Garnets

Previous authors have suggested that the contact metamorphic effects of the nearby quartz diorite intrusive were instrumental in forming the large Wrangell garnet crystals (2), (3), (4). But garnets having a composition essentially that of almandite cannot be considered to be of contact metamorphic origin in the strict sense of the word. Grossularite-andradite, $Ca_3(Al, Fe''')_2(SiO_4)_3$, is the typical contact metamorphic garnet. Almandite, $Fe_3Al_2(Si0_4)_3$, is the type of garnet that characteristically occurs in middle-grade regionally metamorphosed argillaceous rocks.

In most places the garnets in the middle-grade schists of the "Wrangell-Revillagigedo belt" are less than ¼" in greatest dimension, but there are a few localities where abundant large garnets reach a maximum size of 2". One of these places is the Wrangell deposit. Another at Port Houghton about 60 miles northwest of the Wrangell locality has been described by Buddington (3). Here a belt of quartz-mica-garnet schist about 6 miles wide strikes northwest and dips steeply to the northeast. The garnets generally range from ⅛" to ¼" in diameter, but locally certain bands of schist contain garnets up to ½" in greatest dimension. Garnet makes up 10% to 20% of the volume of the rocks in the richest bands. At another locality on Kanagunut Island (fig. 2) at the extreme southeastern end of southeastern Alaska and about 150 miles southeast of the Wrangell deposit, garnetiferous schist carrying large garnets has been observed. Most of the quartz-feldspar-biotite-chlorite-garnet schist in this area carries small garnets less than ½" in diameter, but on the southern end of Kanagunut Island (Garnet Point) there is a band of schist about 10 feet wide, striking northwest and dipping about 55° to the northeast, that contains garnets up to 2" in greatest dimension. In places as much as 40% of the rock is garnet. About 200 feet to the north there is a parallel band about 8 feet wide containing many garnets of approximately the same size. However, all the crystals at this locality are very irregular and nothing suitable for collecting was observed during a brief visit here in 1952.

Detailed geologic mapping in the "Wrangell-Revillagigedo belt" of metamorphic rocks would probably disclose several other localities containing large garnet crystals. If the proper stress and heat factors act on rocks of the proper composition, large garnets can be formed by regional metamorphism.

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SIMPLIFIED AUTORADIOGRAPHY

By Ronald L. Ives
5415 Main St., Williamsville 21, N. Y.

Introduction

The photographic effects of radioactive emissions were noted by Henri Becquerel in his early papers announcing the discovery of radioactivity in 1896. For more than a quarter of a century thereafter, the electroscope and the photographic plate were the two best detectors of radioactivity.

About 1925, it was discovered that ordinary roll film could be used to detect radioactivity in the field, exposures of from ten days to two months being needed with the films then available. This method can still be used, but is rather inconvenient and quite costly, even though faster films now reduce exposure time to about one week.

Relatively recent development of high-speed X-Ray films, in convenient packaging for daylight handling, and suitable for almost any type of commercial development, has made possible detection of radioactivity by simple, quick, and cheap photographic methods, suitable for use by anyone, and requiring no special laboratory methods or equipment.

Autoradiographic Films

Autoradiography is the procedure for having any substance "take its own picture" by means of the radiation it emits.

Films most suitable for mineralogical autoradiography are high speed, double-coated X-Ray films, which are available in a wide variety of sizes, shapes, and packaging. Those most convenient for most work are dental X-Ray films, designed for daylight handling, and having very great exposure latitude, so that "drug store" development will give satisfactory results.

Representative of these films is Eastman Occlusal Super Speed Dental X-Ray Film, which is customarily supplied in packages of 10 sealed packets, each containing two films approximately 2-¼" by 3". Net price of this film, which is coded DF-45, is $2.85 per package of 10 packets. Substantially identical films are produced by other manufacturers in the United States, Canada, England, France and Germany.

Autoradiographic Procedure

To make an autoradiograph, place the sample on top of one dental X-Ray packet, and leave it undisturbed for about 48 hours. A few hours' difference in exposure makes no difference, good exposures being obtainable in as little as ten hours with mineral samples, and autoradiographs from the same samples have been obtained with exposures exceeding ten days.

After exposure, develop the film by any standard procedure, and fix and wash as for ordinary photographic film. Contact prints can be made from the film negatives in the customary manner, and enlargements are entirely possible, although of doubtful usefulness.

So simple is the processing of these films that it may safely be entrusted to any competent photo-finisher with the instructions "Handle like 620 Verichrome".

Results

Samples of autoradiographs obtained by the methods outlined comprise Fig. 1. The control is a blank, not intentionally exposed to radioactivity, and showing, by its lack of fog, that it was not accidentally exposed. The Uraninite sample was a piece of "grade ore" from Central City, Colorado; the Carnotite was from the Paradox Valley, Colorado; and the UX_2 234 was a *Tracerlab* secondary standard, calibrated at 1.28×10^{-5} millicuries.

Precautions

Although dental X-Ray films are packaged for daylight handling, and have great resistance to changes of temperature and humidity, they should be handled with reasonable care and common sense.

These films fog badly if kept at temperatures of much more than 150° F.; they become extremely brittle at temperatures below zero, Fahrenheit; and they fog if left in bright sunlight for several days, even though they are substantially immune to indoor room light for long periods, such as six weeks.

Dental X-Ray films are sensitive to

X-Rays and radioactive emissions, regardless of the source. In consequence, it is not good practice to keep the films in close proximity to the mineral specimens until the exposure is begun. In general, the films should be kept at least five feet from radioactive minerals unless they are shielded, and a greater distance, depending on the radioactive strength, from refined radioactive materials.

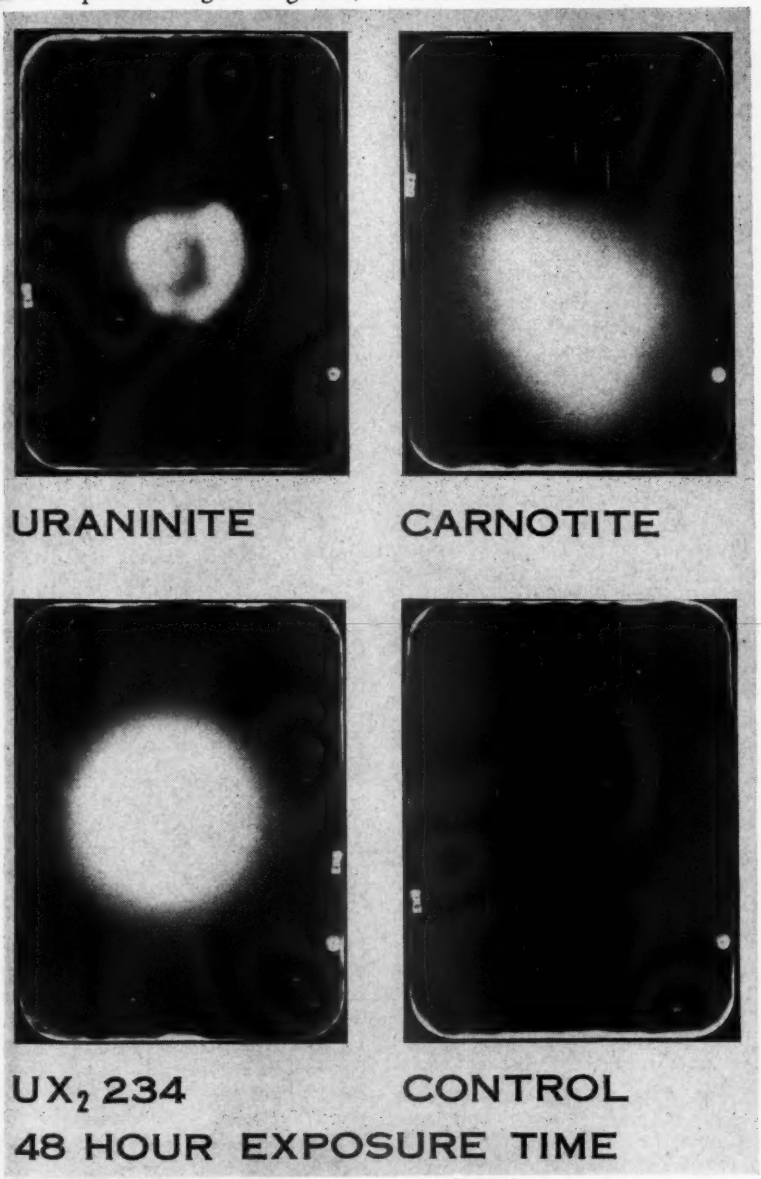

Fig. 1. Sample Autoradiographs

NOTES ON THE GLAUCOPHANE SCHISTS OF THE CALIFORNIA COAST RANGES

By Lu Watters
P. O. Box 88, Cotati, Calif.

The term "glaucophane schist" is used in a broad generic sense throughout this paper to indicate a unique family of metamorphic rock types that occur together in the California coast ranges. They are characterized by glaucophane, a distinctive soda-rich blue amphibole that is conspicuous in a majority of the rocks of this group.

The composition of these rocks, subject to local variation, is usually some combination of glaucophane, muscovite, actinolite, pyroxene (diopside-jadeite series), albite, quartz, chlorite, almandite, hornblende, clinozoisite, lawsonite, and pumpellyite. Combinations of these basic constituents and associated minerals frequently differ from one locality to another and sometimes even from rock to rock with a suddenness that is often startling.

The bulk of the original material that was converted into schists was Franciscan sandstones and contemporary sedimentary rocks. However in some instances the schists and related rocks have been formed from igneous or meta-igneous material and differ in composition from those of sedimentary origin. In places where both types occur, abrupt changes in mineralization can be expected.

In some regions the schists have been broken up and transported in a disorderly fashion by landslide action, which is common in the serpentine and schist zones of the coast ranges. As a result, oddly contrasting types are often found side by side in the field. Many of these displaced rocks are quite large and give the illusion of being in place.

Other causes of sharp variation in the rocks are the eccentric results of successive stages of infiltration by hydro-thermal solutions, and the effects of metasomatism and other metamorphic processes.

In spite of the diverse changes in mineralization, the glaucophane schists as a group rarely lose their characteristic look, and are distinguished at a glance from other rocks of the coast ranges.

Some of the schists are simple rocks that are primarily made up of one or two minerals accompanied by minor amounts of accessory minerals. Examples of these are glaucophane-muscovite schist, glaucophane-actinolite schist, hornblende schist, chlorite schist, glaucophane-lawsonite schist, omphacite-garnet granulite (eclogite), and muscovie schist. Examples of the more complex types of schists are glaucophane-clinozoisite-muscovite- garnet schist, glaucophane-garnet-albite granulite, glaucophane-muscovite-omphacite schist, and glaucophane-muscovite-lawsonite-garnet schist. "Glaucophane schist" as a field term of convenience incorporates all the foregoing types and others of less common occurrence.

Although uncommon in most parts of the world, glaucophane schists are found sporadically occurring in the California coast ranges through a narrow zone some 400 miles in length that extends from Santa Barbara county north to Humboldt county. The glucophane areas are usually small in size, erratic in continuity, and are habitually found near or within zones of serpentine or other meta basic or ultrabasic intrusives. More extensive areas of glaucophane schists are seen in a few places—notably in western Sonoma county where they more or less follow the zone of redwood trees the entire length of the county. A few of the larger schist bodies in Sonoma county have estimated thicknesses of from 2,000 to 4,000 feet.

The dominant color tones of the glaucophane schists are the blues and greens which are sometimes seen together in beautiful contrasting shades. Glaucophane, which is generally visible in the schists as slender prismatic crystals, is responible for the blue colors of the rocks that range from a light grayish-blue to a deep indigo blue. The deep green colors are chiefly due to actinolite and the diopside-jadeite series of minerals.

The texture of the glaucophane schists varies from schistose to compact granulose. A predominance of amphiboles and muscovite favor the schistose textures and the granulose rocks as a rule feature the pyroxenes.

In some areas, gradual transitions can be observed from unaltered Franciscan sedimentary rocks to highly metamorphosed glaucophane schists. The degree of mineralization normally increases near the intrusive borders, but oftentimes the evidence is muddled due to the shifting of the rocks from their original positions.

Veins or networks of veins of albite, quartz, pumpellyite, or lawsonite are sometimes observed cutting across the zone of schistosity in the glaucophane schists. Albite is the most common vein material, although in some localities lawsonite is more prevalent. Quartz veins are prominent only at a few localities. Narrow veins of pumpellyite are generally seen in the areas where lawsonite is found. The veins of pumpellyite appear to have formed earlier than the lawsonite as they are frequently cut by the lawsonite veins.

The intrusives that were responsible for the formation of the glaucophane schists were usually either peridotite or some variety of peridotite such as saxonite, pyroxenite, or dunite before their alteration to serpentine. In a broad sense, the glaucophane schists can be considered as contact girdles encircling these intrusives, or as contact mantles overlying them. Pressures created by the intrusive magmas probably helped in some degree to form the schists, but their exact role is obscure and much more difficult to trace than the chemical effects of the magmas on the invaded rocks.

Geologists and mineralogists working on the origin of the glaucophane schists have understandably brought forth some conflicting opinions on the problem but nevertheless are collectively moving closer to the solution of this diabolic nightmare of coast range metamorphism. N. L. Taliaferro, professor of geology at the University of California, has worked perseveringly on the geology of the coast ranges for many years. His papers on the subject are the most comprehensive and important to date, and have provided all recent writers with a solid background to work from. Adolf Pabst, Austin F. Rogers, and George Switzer have made notable contributions on the mineralogy of the glaucophane schists. Early writers of importance include G. D. Louderback, J. P. Smith, W. T. Schaller, C. Palache, A. C. Lawson, F. L. Ransome, and W. C. Blasdale.

Mineral Species

The first list below, alphabetically arranged, contains the names of the characteristic minerals of the glaucophane schists. The second list contains the names of minerals that are either rarely found or are of but minor importance.

I

1. Actinolite
2. Albite
3. Almandite
4. Antigorite
5. Apatite
6. Biotite
7. Chlorite
8. Clinozoisite
9. Crocidolite
10. Crossite
11. Diopside
12. Epidote
13. Fuschite
14. Glaucophane
15. Hornblende
16. Jadeite
17. Lawsonite
18. Leucoxene
19. Muscovite
20. Omphacite
21. Pumpellyite
22. Quartz
23. Riebeckite
24. Rutile
25. Sericite
26. Sphene
27. Talc
28. Zoisite

II

1. Azurite
2. Calcite
3. Chalcopyrite
4. Chrysocolla
5. Covellite
6. Gold
7. Graphite
8. Pyrite
9. Stilpnomelane
10. Turquoise

Collecting

A majority of the minerals on the first list are found in one locality or another as specimens of special interest to the collector, but it must be emphasized that they cannot be plucked like grapes from the vine. Time, patience, careful searching, proper tools, and some cautious trimming are all necessary to put good specimens into the mineral cabinet.

Three different categories of material may be collected in or near the glaucophane areas—micro or visual crystal

groups, interesting rock types, and in some localities lapidary material.

The best source of lapidary material is among the cherts, serpentines, and other Franciscan rocks that are found bordering the glaucophane schists. Good jasper is found among the cherts, and both nephrite and jadeite types of jade have been discovered in a number of serpentine areas of the coast ranges in recent years.

As far as the writer knows, the possibilities of massive lawsonite as a lapidary material have not been investigated. Although not too common, lawsonite at times is found in thick solid veins in colorless, white, dull pink, gray and grayish-blue colors. Possessing a vitreous luster and a hardness of 7 to 8, the mineral could conceivably take an excellent polish. Another possibility is some of the compact pyroxene rocks that are found in attractive shades of green and sometimes resemble jade. Only dense, fine-grained material that is free of excessive mica and garnets should be selected for cutting and polishing.

Interesting Occurrences and Localities

Zoisite is generally found as a minor constituent of the glaucophane schists and occasionally has been found as very small crystals, but in 1945 the late Magnus Vonsen reported the occurrence of large radiating groups of zoisite in which some of the bladed crystals reached a length of 2 feet! This unusual occurrence was exposed during road work on the new Covelo road, 3 miles east of Longvale in Mendocino county. Mr. Vonsen's outstanding collection of minerals contained a superb suite of minerals from the coast range schists. Both Mr. Vonsen's personal research in the coast ranges and his ready assistance to others interested will long be appreciated and remembered.

Well developed prismatic crystals of bright green actinolite up to 16 centimeters in length were found penetrating a white talcose sericite schist in El Cerrito on the east side of San Francisco Bay. Small attractive sunbursts of indigo blue glaucophane crystals on a matrix of white clinozoisite occur sparingly at this locality. Crossite, an amphibole intermediate between glaucophane and riebeckite, was found in this same general area in 1894. Crossite and riebeckite are much rarer in the coast range schists than glaucophane. Some occurrences of these two minerals have probably been overlooked as they are not always easily distinguished from glaucophane in the field. The El Cerrito locality is part of an interesting zone of glaucophane schists that border the Hayward fault through the hills of Berkeley, Albany, El Cerrito, Richmond and San Pablo. This area, handy to the University of California at Berkeley, has provided material for many important early studies on the geology and mineralogy of the glaucophane schists. The rapid growth of population has substantially reduced the size of the open field areas, but some collecting can still be done in the vicinity.

Actinolite is common in the glaucophane schists as subordinate masses of deep green prismatic crystals that are commonly bladed in habit. The masses of actinolite, often in nodular shapes, are found in nearly all localities. The nodular masses characteristically weather out as homogenous rounded boulders that can be easily mistaken for waterworn boulders. Individual crystals of actinolite commonly reach a length of 12 centimeters. George Switzer, in his studies of minerals of the glaucophane schists north of San Francisco Bay, reports individual crystals of actinolite reaching a length of 50 centimeters.

Glaucophane schists showing odd wind polished surfaces were noted by the writer near Jenner in Sonoma county and at Richmond in Contra Costa county. Both these localities are subject to persistent buffeting by prevailing westerly winds. The highly polished surfaces, somewhat resembling ancient hand-polished jade, occurred only on the windward side of the outcroppings, and left little doubt that the phenomona was due to abrasive action by wind instead of water.

Free gold was found in omphacite-eclogite rocks in Coyote Creek about 18 miles southeast of San Jose and 6 miles east of north of San Martin in

Santa Clara county. Massive, granular garnet in veins or vein-like bandings held the gold, and when assayed back in 1904, showed nearly two dollars a ton. The Diablo Range, which spawned this odd occurrence, has numerous other interesting glaucophane areas scattered throughout Santa Clara and Alameda counties. Many field trips and important observations were made in this territory by Dr. Austin Rogers during the period he taught mineralogy at nearby Stanford University.

Another surprising species to turn up in the schists was turquoise, which was found in San Benito county in the Mercy Hot Springs district about 4½ miles north of Llanada. This occurrence is in an extensive area of glaucophane schists that have been mineralized by carbonates and other compounds of copper. Turquoise was found as narrow veins cutting the schists, and some material of good color has been taken out. Several prospect pits have been dug, but so far as the writer knows, neither turquoise nor copper ore were found in amounts sufficient to warrant commercial development.

Jadeite in distinct crystals was found by the late Dr. John Peoples in the bed of the Russian River, 2¼ miles north of the Sonoma-Mendocino county line near U. S. Highway 101. These extremely rare crystals occurred in vugs in light colored veins of jadeite that traversed four glaucophane boulders. The source of these boulders in unknown, but Dr. Peoples thought that they may have been pushed over the bank into the river bed during road construction. Most of the jadeite crystals were colorless or transparent, and a few had clear emerald-green tips. Some of the crystals were doubly terminated. The discovery attracted wide interest among mineralogists, and an excellent paper on the occurrence and mineralogy was written by C. W. Wolfe (see reference). Dr. Peoples, like his friend Magnus Vonsen, was a resident of Petaluma, California, and an enthusiastic mineral collector. He was nearly always accompanied on his field trips by his wife, Bernice, and sometimes by Mr. Vonsen. His patience and optimism was demonstrated by the fact that he often chose to look over areas that were considered barren by most collectors. Of all the minerals found by Dr. Peoples in these "barren" areas, the jadeite crystals were perhaps the most significant.

In his article, "Unusual Minerals of the Bay Area", Richard Crippen Jr. points out a number of interesting localities. Among these is the area of glaucophane schists found about 2 miles north of Valley Ford on the headwaters of Ebabias Creek in Sonoma county. Outstanding specimens of blue glaucophane were found here as crystal bundles in vugs and as stellate rosettes on a matrix of clinozoisite. Interesting lawsonite and small crystals of yellow sphene and red rutile also occur at this locality. Mr. Crippen's article is one of several fine papers that make up Bulletin 154, "Geological Guidebook of the San Francisco Bay Counties", published by the California Division of Mines in 1951.

The Tiburon Peninsula

The Tiburon Peninsula in Marin county has the most varied assortment of minerals typical of the glaucophane schists that the writer has seen anywhere in the coast ranges. Lawsonite was first discovered in the schists of the peninsula by F. L. Ransome in 1895 and named for Andrew C. Lawson of the University of California. Numerous other occurrences have been found in the coast ranges since then. The type locality is half a mile east of Reed Station, a railroad stop on the southwest side of the tiny peninsula.

Choice examples of lawsonite from the type locality are not abundant, but occasionally good pale blue crystals with sharp faces are taken out. The majority of the crystals have rough faces and are weathered to a dull pink, white or gray color. Crystals up to 3 centimeters or more are sometimes found, but the average size is below 1 centimeter. Prismatic lawsonite crystals with chisel-like ends formed by 2 pairs of the (m) faces seem to be the most common form at the Reed Station locality. Tabular crystals occur as porphyroblasts and once in a while a lucky

blow with a trimming hammer will leave some undamaged crystals protruding cleanly from the matrix.

Good twinned albite crystals are found at several localities on the peninsula. The colorless to white tabular albite crystals range in size from micro crystals up to 2 or more centimeters in length. Colorful layers of emerald-green fuschite, a chrome bearing mica, were found interbedded in glaucophane schist near the serpentine zone on the south side of the ridge northeast of Reed Station. Fuschite is found in a number of glaucophane areas, but usually only as isolated flakes or small aggregates of crystals. Well formed prismatic amphibole crystals of very pale greenish-blue color and averaging 1 centimeter in length were found near the fuschite occurrence. Pale, low iron members of the tremolite-actinolite series are much less prevalent among the coast range schists than the deeper green actinolites.

Pumpellyite is common on the Tiburon Peninsula as veins and acicular crystals lining vugs. In some outcroppings, pumpellyite is one of the major constituents of the rocks. The pumpellyite is found in pale yellow, straw yellow, yellowish-green, and dull olive green colors. Acicular pumpellyite crystals are found as scattered clusters in vugs and also as radiating groups, sheafs, and occasionally as isolated crystals. One fine micro specimen was found by the writer showing tiny, well formed prismatic crystals of pale gold-colored pumpellyite protruding through a background of snow-white massive calcite that lined a vug in glaucophane schist. Further searching for this material so far has proved unsuccessful. Aggregates of pale green muscovite crystals in book form and in semi-rosette groups are found associated with pumpellyite. Almandite garnets partially and totally replaced by pumpellyite were noted in the area. Small dark green crystals of omphacite are found as groups lining tight vugs in the pyroxene bearing rocks. Reddish-brown prismatic crystals of rutile up to 1 centimeter in length occur as inclusions in small masses of pink sphene that appears to have been developed by metasomatism. The best specimens of pumpellyite, muscovite, rutile and sphene were from the north side of the peninsula approximately 1½ miles southeast of Highway 101, and about ¼ mile up the slope from the county road.

Enormous boulders of eclogite can be seen a short distance east of Reed Station near the railroad tracks. The rocks are predominately made up of omphacite thickly studded with small dodecahedrons of almandite garnet. Eclogite specimens of rare beauty can be found along the slopes on the north side of the Tiburon Peninsula.

Conclusion

The glaucophane schists are without doubt one of the most interesting rock groups that occur in California, and yet they have received little attention outside of investigations by professional geologists and mineralogists. Many people are probably not aware of the large variety of minerals that can be collected in the glaucophane schists. Others may have been discouraged by the fact that collecting is at times very slow and unproductive. The schists guard their secrets well and sometimes several trips are necessary to cultivate the acquaintance of a single small locality. Many of the outlying glaucophane areas are not too difficult to reach but are rarely visited and remain virtually unknown. These remote regions collectively represent a vast and almost inexhaustible area in which to search for minerals, and should prove to be of considerable importance to mineral collectors in the future.

The writer wishes to express his gratitude to Mr. Richard Crippen Jr. of the California Division of Mines for his assistance in identifying various mineral species, and for checking over this paper.

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A ROCKHOUND'S FAITH

by Bevan M. French

"There is no God," some say; I stand and hear
And shrug, and turn away, and do not speak.
For who am I to rage against a wall
Another person has the right to build?
But when, from all the heated thoughts of life
I slip away to places that I love,
In search of specimens to line my shelves,
And strike my steel upon a sun-warmed stone,
The formless unformed chips of rock fly high
And go their scattered ways; this is but Chance.
But then, when in the stubborn rock I drive
And turn some unknown cavity to light,
A crystalled form within gleams bright and clear
And throws the new-seen light into my eyes.
It may be longer than my arms can reach,
Or shaped so small that my unaided eyes
Will fail to see the marvels of its form.
Yet still it is, and formed, and shaped, and placed
According to the rules of some great Law,
Unseen, unvarying, half-understood.
This is Design; there must be a Designer.
I know no more, yet walk along my road,
Untroubled by the words of those who cannot see.

NODULES - GEODES - CONCRETIONS

We have had a number of inquiries about nodules, geodes, and concretions and how to distinguish them.

A nodule (from the Latin meaning knot), is a rounded mass of irregular shape, a little knot or lump of some mineral. Example, a quartz nodule.

A geode (from the Greek, meaning earth form), is a nodule which is hollow or has a cavity that is often lined with one or more minerals. Examples, limonite geodes; quartz geodes. A geode may also be called a hollow nodule.

The term geode, meaning earth form, may seem a little confusing so an explanation is necessary. The term comes down from ancient history. In those days if limonite nodules were hollow and contained loose earth, they were called geodes by ancient mineralogists. Today, many limonite geodes are found filled with sand or other material.

A concretion (from the Latin, to grow together) is a mass formed by the aggregation and precipitation of some mineral like quartz or calcite around a nucleus, which is often a fossil. In shape they may be rounded, spherical, oval, flattened, elongated, etc. or combinations of these forms, making often curious and fantastic forms, Example, claystone concretions.

Nodules are generally rounded while concretions are of odd shapes, which is one way of telling them apart.

To differentiate between a nodule and a geode, the specimen must be broken open and if hollow, it is a geode. Experienced collectors can tell by the weight if a nodule is hollow—solid nodules are heavier than hollow ones.

Peter Zodac

A INTERESTING QUARTZ CRYSTAL LOCATION

By Captain George W. Owens
Box 907 OMS Mather AFB, California

Near the town of Mokelumne Hill on Hi-way 49 in California there is an interesting deposit of quartz crystals. These XLS are clear, many suitable for faceting, and display as specimens. Both singles and fine groups have been obtained by the writer. Double terminated, penetrations, and other odd forms are common.

One of the most interesting crystals that I have obtained from this location is a large (over five inches long) crystal twin, double terminated, and has included no less than three other double terminated crystals of good size.

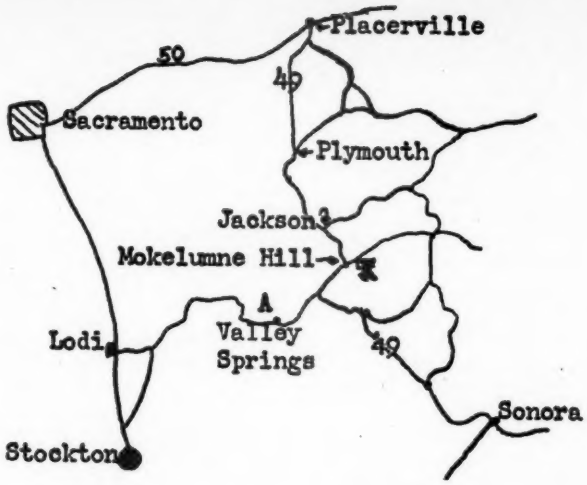
Good groups are common and need only to be cleaned of the red clay to be a welcome addition to anyone's mineral collection, however, let me stress the fact that they are not to be picked up from the top of the ground. If you go to this location be prepared to DIG. The ground is hard in the dry season but easy to work during the rainy season. I have by no means depleted the location and there should be sufficient crystals for a long time to come as the vein shows no trend toward closing.

The vein is hard to find and only a determined collector will locate it. I will give as accurate description of the location as possible and hope that you have the luck that I have had in obtaining fine crystals.

From Placerville on US Hi-way 50 turn onto California state hi-way 49 going to Plymouth, Drytown, Amador City, Sutter Creek, and Jackson, all famous old gold camps, proceed thru Mokelumne Hill and just as you leave town on route 49 there is a cross-road going to Glencoe. Turn left off 49 onto this cross-road—it is a good all weather road—several miles down this road is the turn-off to the now deserted gold town of Jesus Maria, an inquiry at the service station at the cross road and route 49 will probably help you to find this turn off. It too now has a hard surface and while narrow is a good road. According to my speedometer it is one mile, three and a half tenths from hi-way 49 on the cross-road to the turn-off on the right side of the road that leads to Jesus Maria. This road goes abruptly up a hill and right at the very top there will be a large (over 24 inches) pipe line going under the road. From the pipe line to a bridge across a small stream it is two miles and five tenths. This bridge is of wood construction. Stay on the hard surface road. The hard surface will stop before you come to the bridge but will start again after the bridge is crossed.

From the bridge to the parking place for your car is three and six tenths miles over a turning uphill road. You will pass thru the remains of the old town of Jesus Maria and out of the tree country into brush country. Drive carefully and keep a look-out for deer. Some of the turns are very sharp and rather narrow. One good "land-mark" on this part of the road will be a round mail box—evidently made from a section of pipe. Shortly after passing this you will come to a "V" turn, slightly sharper than the rest. I park my car in the notch of this "V", off the road. Looking up the hill to the left of the road will be seen old dumps from a mine.

You might even find a XL or two on the ground where they have dropped from sacks. Anyway, you are now at the place to leave the car, load the pick and shovel and a paper bag or two and start the short walk to the Crystals! Walk up the road in the direction you have been traveling. Go about 100 yards and you will see a trail on your right, going down the slope. This trail is in need of recutting as the brush has started to overgrow it again, but for the most part it is fairly clear going. Continue on down this trail, passing an old claim marker on your right. Once past this marker you are about 100 feet from the crystals. Continue on down the trail watching closely to your right, about fifty feet from the marker you will see a small (3x4) XL Group at the base of



An interesting quartz crystal.

some brush. Turn abruptly to your left, leave the trail and go to the bottom of the gulch—a distance of about fifty feet. You will see on the same side of the hill that you have just gone down, the diggings. Please do not take the small group on the trail as it is a marker—remember that your are in brush country and cannot see many feet in front of you. There is a fairly plain trail from the XL group to the diggings and should be easy to find. There are thousands of small single XLS scattered around on top of the ground at the location, so even if you do not care to dig you should be able to find some fine small specimens for your collection.

As far as I know, this is the first time that this location has been revealed. It should supply many fine specimens for a long time to come—please take only what you actually want and leave some for the next fellow. Remember that you are in a dangerous fire area and if you must smoke—for your own safety—be sure they are out before you discard them.

Oh yes, there is considerable poison oak and ivy about—so do be careful, won't you?

Goudey's New Catalog

Hatfield Goudey, Gabbs, Nev., has issued a new catalog of micromount and thumbnail specimens & accessories. It is a 13-page publication, listing specimens alphabetically. In addition, 3 pages are devoted to micromounts—why and how, and mounting technique.

Williams Fine Mineral List

Scott J. Williams, 2346 N. Scottsdale Road, Scottsdale, Ariz., has released a 9-page price list of fine mineral specimens. The specimens are listed alphabetically, from Adamite (Mexico) to Xenotime (Norway), are priced reasonably, and the assortment printed is a most attractive one. Send for your price list today—it's free.

Plummer's New Mineral & Gem List

Plummer's, 4720 Point Loma Ave., San Diego 7, Calif., have issued a 10 page 1955 Fall & Winter List featuring many of the items they carry in stock such as minerals, gems, lapidary equipment, books, etc. The price list is free.

Eberbach Laboratory Apparatus Catalog

A new 44-page illustrated catalog shows the complete line of Laboratory equipment manufactured by Eberbach. Available free, this book features the firm's lab shakers ,"Hollow Spindle" stirrers, electroanalyzers, slide cabinets and other apparatus. Request Catalog 55D from Eberbach Corporation, Ann Arbor, Michigan.

USE OF REFRACTIVE INDICES TO IDENTIFY MINERALS

By Otto G. Bartels
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West Springfield, Mass.

Mineral collectors do not use the refractive index method to identify minerals, because they suppose that the method is beyond their ability to use. They should be informed that anyone can use the method, *provided he does not try to copy the professional mineralogist.*

A microscope is needed, but it does not need to be an expensive one. Any microscope magnifying 100 to 200 times will do, *provided it gives a sharp image.* A 75 watt reflector bulb in a clamp-on swivel socket or other lamp, microscope slides, cover glasses, and some liquids of known refractive index complete the material needed. The known refractive index liquids may be bought for $10 to $15. A partial set covering refractive indices from 1.40 to 1.78 will meet the average amateur's needs. Suggest the following refractive indices; 1.40, 1.42, 1.44, 1.46, 1.48, 1.50, 1.52, 1.54, 1.56, 1.58, 1.60, 1.62, 1.64, 1.66, 1.68, 1.70, 1.74, 1.78; as a sufficiently complete set. Those persons who are not sure whether they want to invest much money, or who already own a microscope can use many relatively common liquids for refractive indices up to 1.60. The approximate indices are as follows: Water 1.33, Acetone 1.36, Ethyl alcohol (pure) 1.36 Isopropyl alcohol 1.38, N-Butyl alcohol 1.40, N-Amyl acetate 1.40, Ethylene glycol (permanent antifreeze) 1.43, Kerosene 1.45, Corn syrup (KaroT, SweetoseT) 1.46, Glycerin 1.46, Carbon tetrachloride, 1.46, Olive oil 1.47, Corn oil (Mazola T) 1.47, White medicinal mineral oil (Nujol T) 1.48, Turpentine 1.475, Castor oil 1.48, Lubricating oil (auto) 1.50 (depends on grade), Benzol 1.50, Cedar*wood* oil 1.515, Clove oil 1.53, Nitrobenzene 1.55, Cassia oil 1.60, Pyranol T (non-inflamable transformer, condenser filling) 1.6 plus. The above materials that are not pure compounds may vary from the stated values.

The technical name for the method I use is the oblique lighting method. My version of the method depends on the construction of a simple microscope accessory. This arm displaces the microscope mirror approximate 2 inches to one side of its usual position. *Warning - All microscopes with non-removable substage mirrors cannot be readily adapted to this method.* Most microscope mirrors are pivoted in a yoke with a slotted stem to fit the mounting hole beneath the stage. This type can be removed by pulling and twisting on the yoke. I made the accessory in the following way. Secure a bolt that is a snug fit in the mirror mounting hole. Cut off the head leaving a 2 inch length with threads. Mount this bolt section with nuts in a hole drilled in a ¼ inch thick strip of aluminum. Slot the protruding bolt section and spread the halves slightly. About 2 inches from the bolt section drill a hole that is a tight fit for the microscope mirror mount. *Check your microscope to make sure that light can be reflected thru the hole in the stage at such an angle.* To use, place the slotted bolt in the original mirror mounting hole and place the mirror mount in the other hole. Rack up the objective so that the mirror can be seen thru the hole in the stage, by looking from the opposite side of the microscope to the one on which the mirror has been placed. Direct the beam of light from the lamp at the mirror. Twist the yoke of the mirror so that the plane of the two sides of the yoke is perpendicular to the line of sight thru the hole in the stage. Turn the mirror back and forth on its pivot until a brilliant flash of light strikes the eye. Adjust the angles of the yoke and mirror until maximum brilliance obtained.

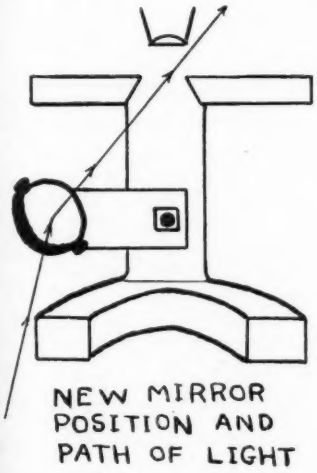
The mineral to be tested is crushed to a fine powder and a pinch placed on a microscope slide, then covered with a cover glass or part of one. A drop of liquid is placed at the edge of the cover glass. Capillary action draws the liquid under the cover glass and around the grains. With whole cover glasses more than one

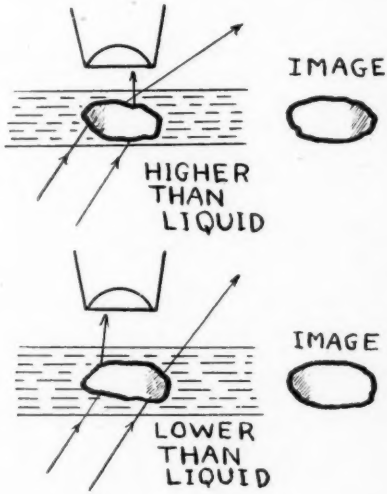
drop is often needed. Coarse grains of mineral that will interfere with this operation can be removed by placing the crushed powder on a piece of paper, inclining slightly, and then tapping. The coarse grains roll downward easier than the fine grains, and the pinch of powder can be taken from the fine particles at the top of the paper.

The slide is placed under the microscope and the microscope focused on the grains and liquid. A strip of cardboard is used to intercept the light, and the mineral grains are watched to notice which edge lights up when the cardboard is lifted. I find that grains having a higher refractive index than the liquid light up on the same side as that on which the mirror has been placed. With lower refractive index the reverse is true. *The inversion of the image by the microscope has not been considered in this description.* When minerals of great double refraction or impure minerals are being tested, different edges may light up on different grains. By making slides using different refractive index liquids, it is easy to find the average refractive index of the randomly oriented particles. When the refractive index of the liquid approaches that of the mineral, the outline of the mineral become indistinct and the particle tends to become invisible. Inclusions and color prevent perfect invisibility. Another indication that the two indices are nearly alike is the appearance of particles showing red and blue tints on opposite edges. The particle and liquid but differ for red and blue light. Liquids having high dispersion may show red and blue edges when the liquid and mineral still differ by 1 or 2 units in the second decimal of the refractive index.

Once the refractive index is found for the mineral, consulting a table of minerals arranged by refractive index will show what minerals the unknown might be. Other properies, such as, hardness, specific gravity, cleavage, mineral associates, color, etc. will eliminate most of the various possibilities so that only one, or at the most a few minerals have the observed properties. U. S. Geological Survey Bulletin 848, The Determination of The Nonopaque Minerals (price 50 cents) from the U. S. Government Printing Office, Washington 25, D. C., has a very complete listing of minerals by refractive index. Books, such as, Optical Mineralogy by Rogers and Kerr also have good tables.

The reader of this article can secure practice in recognizing the features of





this method by making several slides. Powder from a quartz crystal or fragment mounted in water illustrates a mineral having a higher refractive index than the liquid (1.55,1.54 in 1.33). Another slide prepared by beating air into corn syrup illustrates a particle having a lower refractive index than the liquid (1.0 in 1.46 approx.) Calcite powder mounted in a liquid having a refractive index between the two principal refractive indices of calcite will illustrate the mixed results possible with a mineral having a large difference between the refractive indices (1.49,1.66 in 1.57 but try cedar*wood* oil or clove oil).

Those with access to a refractometer can find details of how to prepare their own refractive index liquids in Bulletin 848 and other books on optical methods.

Use of this and other methods of determinative mineralogy on those puzzling minerals, that you are not sure of, will demonstrate in many cases that the mineral is mislabeled. While sight identification can be used on minerals from familiar localities with small chance of error, even here, mislabeling is sometimes found.

DEATH TRAPS URANIUM HUNTERS

Editor R & M:

Enclosed herewith find some clippings from the "Rocky Mountain News" of Denver, Colo., regarding the recent death of two amateur uranium prospectors in a mine tunnel west of Denver.

Inasmuch as thousands of men are running everywhere in this Western country looking for uranium, I believe this matter of exploring any old tunnel should be discouraged, unless it should be known to be free of deadly gases.

Possibly you might be able to use some of this material in your November-December issue and call attention to the fact that these two men caused an expense to the State, the Empire Zinc Co., and the Climax Molybdenum Co., of some $50,000, and lost their own lives.

Carl F. Mathews
609 N. Institute
Colorado Springs, Colo.

Oct. 8, 1955

Uranium Hunts By Amateurs Called Hazard

From the Washington Bureau of The Rocky Mountain News

WASHINGTON, Oct. 5—The U.S. Bureau of Mines says that uranium hunting by amateurs in abandoned mines is becoming a national hazard.

The recent death of two farmers who entered an old Colorado mine in search of uranium is just a sample of the kind of accident that is happening with increasing frequency, Bureau engineers here say.

Not only is the present craze for weekend prospecting leading thousands of "Sunday sourdoughs" to take chances with their lives, but the Bureau has been alarmed at the number of nature-lovers getting in trouble in caves.

"Caves aren't part of our jurisdiction," a Bureau official said Wednesday. "But abandoned mine diggings are.

"And that Colorado accident, in which two died shows the risks to untrained persons venturing below ground."

Glenn Dew, 33, and Melvin Leblow, 45, Ulysses, Kan., farmers, followed their geiger counters into an ancient 6000-foot mining tunnel near Georgetown, Sept. 15.

Rescuers finally found their bodies deep inside the tunnel. They carried oxygen masks and small bottles of compressed oxygen. Officials here said "seemingly, they did not know how to use oxygen equipment properly or misjudged the supply of oxygen.

* * *

"Since many now seeking uranium in the West know little about mining and special protective equipment, we in the Department of Interior caution that the only safe rule for such prospectors is to confine their searching to the surface."

James Westfield, assistant director of health and safety, said it takes long training under competent instructors to learn how to wear gas masks. Masks alone can only filter out some harmful gases. They can't make up for basic oxygen deficiencies.

Westfield pointed out that amateur prospectors run a risk of rotted mine timbers that allow overhead rockfalls, rotted ladders that break under foot, undetonated explosives left underground, and bad water, as well as poisonous snakes and insects.

ROCKY MOUNTAIN NEWS
Thursday, Oct. 6, 1955, Denver, Colo.

World News on Mineral Occurrences

Items on new finds are desired. Please send them in.

Abbreviations: xl—crystal xled—crystallized xline—crystalline fl—fluoresces ph—phosphoresces

ALABAMA — William M. Johnson, RFD 6, Knoxville, Tenn., informs us that according to Barnard's Almanac of 1838, coal was discovered in Alabama in 1821 at point near Tuscaloosa, Tuscaloosa Co. The coal in Alabama is all bituminous, being the southern extremity of the Appalachian coal field.

ARIZONA—R. A. Richards, Box 44, Morristown, Ariz., has sent in the following item, which he titled "Mineral collecting through Arizona pegmatites."

"Inquiries being numerous regarding the where abouts of 'this' and 'that' in Arizona, am writing an article with the thought that, perhaps, I can help those who plan to visit the State, with mineral hunting in mind. Being too much to undertake coverage of all minerals, in one article, we shall take up the Pegmatite Area this time. There is quite a 'belt' of this formation.... running, roughly from northwest to southeast, with many 'branches'....which produces good specimen materials of Columbite, Lithium bearing Mica, Spodumene, Beryl, Black Tourmaline, Muscovite (White Mica) .... and .... remember the 'experts' have it that good Xls. of Orthoclase Feldspar are seldom found in pegmatite formations??? Well, thru Arizona's pegamtites excellent terminated Xls, of Orthoclase are not at all uncommon. Agates (cutting grade) plentiful in some parts....also gem Chrysocolla, and Opal (including 'Fire' Opal) were found by the writer. Native Silver specimens are not uncommon at the Monte Cristo Mine. To reach the Monte Cristo, take road to Constallation, out of Wickenburg, Arizona. Probably easiest route into the central pegmatite country is from Black Canyon Road....excellent road leads in to Crown King, from this hiway: can be entered, by way of Wagoner, also, but last few Miles, Wagonar to Crown King, is very rough. There is a road leading south, from Wagonar, that stays in the pegmatites for 75 Miles....but cannot be travelled by anything but 4-wheel drives. There is a store at Crown King; Crown King Mine is no longer in operation. Good Pyrites of Iron specimens were, once, plentiful here. There are many old mines thru this area.

Another way into this territory is by gravel road, turning off at Morristown, Arizona, eastward. This road is Castle Hot Springs Road. At the point where road CROSSES Castle Creek, one may take right UP Castle Creek with 4-wheel drive, and find good Agate within a few miles (mostly east side of Creek). About 8 miles up colorful Copper Specimens may be obtained, including Native Copper. None of these are found in the Creek bed, however, except, at some points, Agate, Jasper, Obsidian, etc.

Castle Hot Springs Hotel (Resort) is reached by road to RIGHT, just before reaching point where road crosses Castle Creek. By continuing on across CASTLE CREEK, road will lead up to small settlement, with school house—just behind the school is French Creek—bearing to the east you hit Ash Creek, and Red Creek—all this locality produces Agates in gem grades. Just lately these pegmatites have been showing uranium materials: heretofore the uranium minerals were, pretty well confined to the northeast corner of the State. Farther to the north (toward Kingman) pegmatite minerals are found, especially in the Wikieup District. Excellent specimens of Spessartite, among others. To the south Green Garnet (Andradite) is found (Stanley Butte, and Mt. Graham areas). I wish to call

to attention a special note....when in this pegmatite belt, looking over terrain for minerals, beware of open shafts in your path. These cannot be seen, many times, before you are in very real peril of stepping off into them. Not uncommon, thru this area, they are a definite hazard to the careless. Proceed slowly and take a good look.... as there is another thing to bear in mind::: the Diamond Back Rattler. Never forget him, for a minute. Be sure of plenty of water—some food is advisable, I believe, also. Ask locally, regarding any locality you plan to enter, about roads, and water....and, if the party you question doesn't seem very sure of what's what, disregard, entirely, and ask elsewhere. Any serious 'Rockhounds' welcome to stop at my place, for information, or a trade....might even SELL you something, if you don't watch it! Hasta Luego. Amigo del Suyo."

ARKANSAS — The following note, dated Sept. 11, 1955, was sent in by Byron C. Marshall, 204 Central Ave., Hot Springs National Park, Ark.

"A CORRECTION PLEASE!

"In the March-April, 1955 issue of ROCKS AND MINERALS, page 141, under World News on Mineral Occurrences, for ARKANSAS, it stated that the Tridymite form of quartz had been found locally, etc.

"This was my mistake in identification. A considerable quantity of this supposed tridymite came out of a fair sized "pocket" in a bank of mostly small sized gravel and sand, not far underground, and where plant roots had penetrated. Amid this same gravel and sand, were several thousand tiny but regular quartz crystals and clusters of these tiny quartz crystals. The writer got to wondering just why tridymite would be found with regular quartz crystals, as tridymite is supposed to form at a higher temperature than ordinary quartz. So I decided to send samples to the National Museum, Washington, D. C. Dr. George Switzer reported that the supposed tridymite was really dickite, a hydrous aluminum silicate and one of the clay minerals.

"Dickite is not described in any literature I have, and not in the two recent revised volumes by Harvard, but no doubt will be in the third and next volume, as it is a silicate. Thus, at this time, I can not tell you who described this recently found mineral, nor where, though I have seen a few mentions made of it in literature, and I think at least twelve years ago, or about. The massive form of dickite is quite common in this part of Arkansas, and I had it on my price lists about ten or twelve years ago. The massive form looks much like white paint that has been brushed on the surface of rocks. I have collected this massive form from the cinnabar section near Kirby, Pike Co., and several times in different parts of Magnet Cove, Hot Spring Co., Arkansas. Not having any description of dickite, and only the identification of the massive form, I did not know if this clay crystallized or not.

"Mr. O. Stanley, of near Mount Ida, deserves the credit of buying these originally from men whom I think discovered this pocket rather accidentally. I am not too sure of this part, but Mr. Stanley did give me quite a detailed report on this find. This dickite was in lumps and on the surface of massive quartz, and consisted of billions of tiny crystals, so small it requires a 400 magnification to really see them to advantage. They are mostly single crystals though many odd stacks of these single crystals occur. Each, is a perfect six-sided crystal, but these tabulars are in a variety of shapes. Some in general appearance are rectangular, others extremely elongated rectangular. Some triangular. Some square. Some hexagonal, some are a rhombus. All are flat, and have some corners slightly chopped off so to speak, to make them six-sided. Some are such a distorted shape they would be hard to describe. Some have peculiar indentations at various angles. Some are flat and thin, but the crystal curved in almost a circle. Sometimes a number of crystals will be curved in a circle. Some groups stacked like steps, and sometimes thus graduated in size. Some groups of these flat crystals angled out fan-shape. Some crystals penetrating

through others. In fact there seems no end to the odd arrangements. Another interesting feature of these dickite crystals, is that most of them show a weird, fantastic pattern of small, black, hair-like lines as an inclusion, some of these being minute curly-me-cues. These beat anything that I have yet seen as to diversity, and are sure goofy. Some of the original gell seemed not to have crystallized, as some strung-out round rods may be found. The crystals, as they come from the pocket have a very thin coat of iron, that gives them a slight yellowish cast, but this is removed completely with acid solution, and then they are bright and clear like clear glass or optical quartz.

"The regular quartz from this pocket are from about 3/8 to 5/8 inch length. These were found during the winter of 1954, near Mount Ida, Montgomery Co., Ark. They caused quite a stir in this neck-of-the-woods, and were described by one party, as the "world's smallest quartz crystals", and by the present writer as 'tridymite', so we are glad to learn their true identity as 'dickite'."

CALIFORNIA—A recently-completed study has verified the existence of a new mineral, galeite, which has been found only in Searles Lake, California.

Searles Lake, a dry lake about 175 miles northeast of Los Angeles, is the source of raw materials for American Potash & Chemical Corporation's main plant at nearby Trona.

Verification of the new mineral was made through joint efforts by Adolph Pabst, professor of mineralogy at the University of California; Dwight Sawyer, process engineer at American Potash & Chemical Corporation's Trona plant; and George Switzer, curator of minerals at the Smithsonian Institution at Washington, D. C.

Galeite was named after William A. Gale, assistant to the vice president in charge of Research for American Potash & Chemical Corporation, who was director of research at Trona when traces of the mineral were first discovered.

Galeite appears as minute white hexagonal crystals with a maximum diameter of about one millimeter. The mineral bears a resemblance to schairerite, to which it is closely related.

Efforts were made to identify the mineral in 1949 when it was first noticed in drill cores from Searles Lake. Dr. Switzer, of Smithsonian, was furnished with samples and data on the material, but investigation was dropped after preliminary investigation.

More recently, Sawyer, renewed the investigation in cooperation with Dr. Pabst, of the University of California. After Pabst had concluded his investigation, a sample of galeite was sent to Vienna, Austria, where an independent analysis was made which confirmed results obtained in the United States.

COLORADO—Virginia Lillard, 465 Steele, Craig, Colo., has sent in a number of specimens found in an old Indian Camp in Moffat Co., Colo. The specimens include a very nice dark gray moss agate; reddish and gray jasperized wood, and dark gray (almost black) obsidians. The obsidians have been fashioned into knives and scrapers.

CONNECTICUT — The following note, dated Sept. 1, 1955, on some Connecticut minerals were sent in by Richard Schooner, Box 215, East Hampton, Conn.

"I visited the Slocum quarry, (East Hampton) last week. Brownish-black crystals of uranian microlite or pyrochlore are fairly common. They're seldom more than three-eighths of an inch in diameter, but one specimen shows a large number of them—arranged as a thin band, with tiny crystals of orange garnet, probably spessartite, in granular albite. The crystals from this locality are mostly rough, but the broken ones have a brilliant resinous luster. I also noted tiny brown cyrtolite crystals and reddish-brown monazite crystals, the latter ranging up to a half inch across. I obtained a magnificent specimen of non-gemmy green beryl.

"Ralph Lieser, of East Hampton, has some of the finest staurolite crystals that I've ever seen from anywhere. They're mostly untwinned, black in color, beautifully developed in a soft garnetiferous

type of schist, and up to four inches in length. He obtained them at the excellent Diamond Lake locality in East Glastonbury. Excellent specimens of rattlesnakes also exist there, during the summer months. I should know, having almost picked one up while turning over boulders."

DELAWARE — Limonite has been found at Little Creek, 2 miles south of Laurel, in Sussex Co., Del.

FLORIDA — Howard B. Graves, Jr., 826 S. Ingraham Ave., Lakeland, Fla., has sent us a banded, tan colored mass of montmorillonite which comes from Hernando, Citrus Co., Fla.

"This is mined to use with limestone in making cement. It's of Hawthorn age."—on label with specimen.

GEORGIA—Sheaf-like aggregates of stilbite crystals have been found in seams and cavities in biotite gneiss near Barnesville, Lamar Co., Ga. The aggregates are yellowish orange, up to 6 mm. long and 2 mm. thick, and are interspersed with clear, singly-terminated quartz crystals of similar size—GEORGIA MINERAL NEWSLETTER, Summer 1955, p. 65 (Published quarterly by the Georgia Geological Survey, 425 State Capitol, Atlanta, Ga.—Editor, A. S. Furcron).

IDAHO—G. Elmo Shoup, P. O. Box 756, Salmon, Idaho, has sent in some small specimens of colorless, xled calcite which come from Jiggs Lod Claims on McDevitt Creek (McDevitt Dist.), Lemhi Co., Idaho.

The calcite fl. bright red under the Mineralight.

ILLINOIS—Miss Eileen Philpot, 2200 Wascana Ave., Lakewood 7, Ohio, has sent in a section of a small granite boulder which was found in Naperville, DuPage Co., Ill. The specimen is a very nice one, gray in color, and consists of black biotite, white feldspar, (microcline) and smoky quartz.

INDIANA—One of America's largest gypsum mines, a new operation started only a few months ago (see R & M, Jan - Feb 1954, p. 21) at Shoals, Martin Co., Ind., was officially opened on Sept. 21, 1955. The following item, clipped from the Indianapolis Times, Wed. Sept. 21, 1955, was sent in by Walter Reeves, R3, Greencastle, Ind.

SHOALS, Sept. 21—It was a civic holiday here today when business officials and guests turned out for the formal opening of the new $9 million National Gypsum Co. plant.

The new plant, fed by a mine 1700 feet long, will turn out enough wallboard in a year to build two cities the size of Evansville and Bloomington.

IT WAS A festive occasion. Melvin H. Baker, board chairman of the company, was met at the airport by Edward Sohn, president of the Bedford Chamber of Commerce, and Robert E. Scifres, manager of the plant.

Among others scheduled to take part in the dedication, inspect the mine and watch the town's hour-long parade were Gov. George Craig and Congressman Earl Wilson, 9th district, and William G. Bray, 7th district.

In dusters and safety helmets, Dr. George A. Hawkins, dean of the Schools of Engineering, Purdue University; Dr. Charles F. Deiss and John B. Patton of Indiana University's Department of Geology, and the Very Reverend John A. McGrail, S. J., president, and the Rev. Fr. Bernard Holtgrieve, S. J., vice president of West Baden College, went 500 feet underground to watch the gypsum mined.

Mr. Baker, chairman, said the company had spent more than $250,000 on safety in the Shoals operation.

"Have been trying to get you a specimen from this mine but no luck so far."—note from Mr. Reeves attached to the item.

IOWA—Michael Papcun, RR1, Melrose, Iowa, has sent in an interesting specimen which he found at a coal strip mine 5 miles east of Knoxville, Marion Co., Iowa. The specimen consists of brownish, botryoidal calcite on dark brown limestone on black bituminous

coal. The calcite fl. yellow under the long wave.

KANSAS—On a recent tour through the West, Mrs. Julian Wetherbee, 22 Wheelock St., Keene, N. H., collected many minerals. One interesting specimen was found near Meade, Meade Co., Kans. It consists of white opal with patches of moss opal in a gray cherty quartz.

KENTUCKY—"Am sending a box of minerals —from Gratz, Owen Co., Ky., lead mine. They were picked up from the waste dump. The mine is now abandoned."—letter dated May 31, 1955, from Charles Johnson, 307 W. 4th St., Frankfort, Ky.

The specimens received are as follows:

Barite, whitish mass, stained brown.

Calcite, white, cleavable mass.

Chalcopyrite, tiny bronzy xls in white calcite.

Dolomite, tiny white xls on calcite.

Galena, small lead-gray xl masses in barite.

Sphalerite, tiny reddish-yellow xls in cavity in calcite; blackish-brown mass in barite.

LOUISIANA—Selenite occurs in clay at Pine Prairie, St. Landry Parish, La.

MAINE—Miss Nancy Swanson, 153 Watchung Ave., West Orange, N. J., sent in the following note in her letter dated July 9, 1955.

"It might interest you to know that our college club went to the New England States on a five day field trip and made some very interesting finds. My prize 'discovery' was a chunk of white cleavelandite shot through with veins of sapphire-blue corundum from Newry Mountain, Maine. I thought it was triphylite until Professor Pratt established that its hardness was 9. Big tourmalines can still be found there; Professor Pratt found a grass green 2 x 6 crystal right on the ground."

MARYLAND — John O. Griesbach, 12217 Centerhill St., Wheaton, Md., has made 3 interesting discoveries at a locality near Travilah, Montgomery Co., Md., First let us quote from his letter, dated June 26, 1955.

"You will be interested to hear that a new Eastern cutting material has been discovered. It is jade to grass-green diopside, some is chatoyant; some with yellow to red andradite. It makes handsome cabinet specimens also.

"In addition, I am sending you a specimen each of two other new discoveries I have made within the past two months, both from the same locality as the diopside and andradite. I have collected about 200 lbs. of the amphibole, var. anthophyllite, and about 100 lbs. of fair to fine common opal, a week ago yesterday. On a trip to the quarry again yesterday to obtain more of the diopside I found that the face from which the anthophyllite was obtained has been all removed to the crushers, and preparations are being made to "shoot" the opal-carrying face as of tomorrow afternoon. These two minerals do not appear in large seams in the deeper parts of the quarry so I can consider myself lucky to have been on the spot for the short while these minerals were available. I don't know how long the diopside will be available either—the few local concentrations found appear to be dwindling in quantity and massiveness as the quarry is being enlarged and deepened although I have several hundred pounds of hand-picked specimens on hand to satisfy the collectors and cutters."

Five specimens from the locality were received as follows:

Amphibole (*anthophyllite*): whitish, fibrous mass.

Opal, white mass with greenish serpentine; another is a white mass containing dark green dendrites (moss opal).

Quartz (chalcedony)—brownish mass.

Pyroxene (*Diopside*), Jade-green mass with reddish andradite (garnet).

MASSACHUSETTS — James W. Burke, 180 Montague Road, North Amherst, Mass., sent in the following item:

"On Sunday, August 21, 1955, two members of the Springfield, Mass., Mineral Club converged independently on the old lead mines at Loudville, Hampshire

Co. (near Northampton), Mass. on the Manhan River It was the hope of each that the just-receded flood waters might have exposed one of the old dumps which had yielded occasional specimens of wulfenite in the past.

"The guess was right. The river had stripped the top-soil off a portion of the dump and revealed (with the aid of further digging) some good specimens of orange wulfenite crystals on rough quartz.

"The crystals vary in size from one-sixteenth to three-sixteenths inch square. On hand sized chunks of quartz the number of wulfenite crystals varied from 10-30 to 75-150. Two choice specimens were practically coated over with wulfenite crystals sticking out from the quartz.

"The Loudville wulfenite is smaller and by no means as showy as the wulfenite from the Southwest, but a good specimen makes a worthy addition to any collection.

"Other lead minerals found on the Loudville dumps are pyromorphite and cerussite. Most of the pyromorphite is in the form of rough, green coatings on quartz. Some looks like bunches of tiny grapeshot, but under the microscope these are fine crystals. Rarest of all are the easily-visible hexagonal crystals in pockets in the quartz formerly filled by galena. The crystals are about one-sixteenth inch in diameter and four to five-sixteenths inch long.

"A large number of groups of quartz crystal terminations was also found. Most of these crystals are coated, the coatings being yellow, red, blue, brown and black. Some of the coatings, especially the red and yellow are shiny and transparent. The brown, blue and black coatings are mostly rough, thick and opaque. Uncoated quartz crystals may be milky, clear or smoky.

"The Loudville mines produced lead bullets for the Revolutionary War and were operated through the Civil War period."

MICHIGAN—There is a large salt mine right in the city of Detroit (Wayne Co.), Mich., but from all reports no collectors are allowed in it. A large colorless mass of halite (rock salt) from the mine is on exhibit at the Cranbrook Museum of Science, Bloomfield Hills, Mich.

MINNESOTA—Along the banks of the Des Moines River near Jackson in Jackson Co., Minn., are found interesting specimens of calcareous tufa (often called calc tufa). Calcareous tufa is a variety of calcite and is formed by the deposition of calcium carbonate from springs and rivers carrying lime in solution. It often encrusts twigs, branches, leaves, etc., and completely petrifying them.

MISSISSIPPI—In Jasper, Smith and Wayne counties, Mississippi, there is found a material quite famous known as "Chimney Rock", occurring under 15 to 25 feet of limestone. This chimney rock is a thick, massive, yellowish marl-like formation, and is so-called because it is quarried by sawing out blocks which harden upon drying, and locally are used as building stone. Chimneys made from this rock look neat and have been found to be quite durable.

MISSOURI—"Sometime ago you asked if I could get you a sample of oil stained sandstone. I got the sample but for some unexplainable reason I am just getting it off to you. It is from an outcrop of Cherokee sandstone in western Missouri (at Nevada in Vernon County) and is from what you might call a fossil or breached oil fields. All of the light ends have gone off leaving an asphaltic residue in the sandstone."—letter dated Aug. 2, 1955, from Albert L. Kidwell, Carter Oil Co. Research Lab., Box 80, Tulsa, Okla.

The sample is a dull black mass full of dull silvery muscovite flakes. It shows no fluorescence.

MONTANA—Mrs. Ed. P. Olson, Box 425, Beresford, S. D., has sent us an interesting fossil. It is a dark brown baculite with a gray, pearly (opalescent) exterior. Its locality is Cole, Phillips Co., Mont.

"Cole is near Saco and that is where I picked up the baculites at a quarry."—letter dated July 12, 1955, from Mrs. Olson.

NEBRASKA — The following item, dated Sept. 23, 1955, was sent in by Mrs. Ed. P. Olson, Box 425, Beresford, S. D.

"We went to Anoka (Boyd Co.), Nebra., again on another field trip. In Anoka, which is 14 miles south of Fort Randall Dam, S. D., we looked up Oscar Peterson who took us out a few miles to the opalized wood area where we found an abundance of black opalized wood. We also found there pure white slivers of chalk in the cliff near the wood locality. After a picnic dinner we visited his museum and found it very interesting. He has quite a collection, made mostly by trades."

NEVADA — Small yellow-brown xls of fluorite have been found in the Bare Mts. near Beatty, Nye Co., Nev.

NEW HAMPSHIRE—"Would like to report finding amethyst-tipped quartz xls at the Lovejoy's gravel pit, near Conway, Carroll Co., N. H. (scene of large topaz xl find in 1954)."—letter dated Oct. 3, 1955, from John R. Dillingham, Naples, Maine.

NEW JERSEY—The following item, dated Aug. 19, 1955, was sent in by Bevan M. French, 120 Topliff Hall, Dartmouth College, Hanover, N. H.

"I thought I would drop you a letter to enclose some information which you might find interesting, possibly for your "Mineral Notes and News" column. At present I am in Washington, working as a student trainee at the National Bureau of Standards in the Mineral Products Division.

"The informtion I have is of a relatively unknown occurrence of chondrodite and spinel from Franklin, New Jersey.

"Charles Palache, in his "The Minerals of Franklin and Sterling Hill, Sussex County, New Jersey," mentions an occurrence of chondrodite with spinel as follows (p. 103): "Dark orange-red 'chondrodite' in rude crystals with spinel and garnet was found in a prospect shaft on the Tuttle farm, about half a mile southeast of the Parker Shaft."

"A series of prospect shafts paralled to Route #23, is situated on a farm on the east side of Route #23, about a mile from Franklin Pond. As the shafts are on someone's property, *permission should be asked of the owner,* who lives across Route #23, before entering the property.

"Chondrodite and spinel are quite common in the boulders of limestone that surround the filled-in shafts, associated with phlogopite, graphite, and pyrrhotite. In one specimen that I collected, the spinel crystals, black distorted octahedra, are about ½" across, while on the reverse side of the specimen is a 1" distorted rude crystal of chondrodite, identified by optical tests. Some of the boulders had decomposed in the atmosphere, leaving the chondrodite and graphite grains etched out of the matrix.

"While better specimens of the material are found at many of the localities surrounding Franklin, this is the only occurrence that I know of at Franklin of so-called "typical" chondrodite (i.e., brownish grains in limestone). The only other occurrence of chondrodite from Franklin (Palache, p. 103) is as cores of yellow norbergite in Franklin limestone. The prospect shafts mentioned were in the older Kittatiny limestone."

NEW MEXICO—Beautiful specimens of dumortierite, steel-gray in color with a dark bluish lavender tint have been found in veins on the west slope of La Madera Mountain, Petaca District, Rio Arriba Co., N. Mex.

NEW YORK—Ralph C. Gosse, P. O. Box 8072, Albany, N. Y., has sent in the following item, dated Sept. 15, 1955:

"It may be of interest to note that this summer while the Catskill Mountain Stone Company of Cairo (Greene Co.), N. Y., was in blasting operations, a fossilized fern tree of about 9 feet in length was discovered. Through the courtesy of company officials, work has been stopped in this section of the quarry in order to preserve the specimen.

"Paleontologists and geologists from various parts have come to examine this specimen estimated at millions of years old.

"Mr. Vernon Haskins, who operates a non-profit museum in East Durham,

N. Y., will attempt to remove the specimen and assemble it through the help of geologists for his museum.

"I am herewith enclosing a photograph of the specimen but due to unfavorable weather conditions at the time this photo was taken the tree cannot be seen very well (photo too light to print).

"Under separate cover I am mailing you a specimen of this fossilized wood."

A 4½ inch long specimen, dull dark grayish-black mass, containing thin streaks of lustrous anthracite coal, was received. It is an interesting specimen.

NORTH CAROLINA—A good specimen of black chromite mass from near Webster, Jackson Co., N. C., has been sent us by Col. Orville M. Hewitt, 6 East Forest Road, Biltmore Forest, Asheville, N. C. "Part of the ring dike."—on label.

NORTH DAKOTA — Mrs. Ed. P. Olson, Box 425, Beresford, S. D., has sent us an interesting chalcedony pebble. It is brownish, deeply pitted, with half of its surface a pure white. The locality is Dickinson, Stark Co., N. D.

OHIO—The following letter, dated July 18, 1955, comes from Clarence C. Willits, 1107 Young St., Piqua, Ohio.

"Under separate cover, I am sending you several specimens from Pugh Quarry near Custar, (Wood Co.), Ohio. While blasting the north wall recently, a large vug was opened up which contained Barite, Calcite, Pyrite, Marcasite, Aragonite and a small amount of Fluorite. I just happened to be hunting there at the right time and obtained a nice lot of specimens some of which were combinations of the above mentioned minerals."

Four beautiful Barites, all xled, and varying from gray to bluish-gray were received.

OKLAHOMA—We are indebted to Marie Kennedy, 737 West Kansas, Blackwell, Okla., for the following interesting item, dated Sept. 26, 1955:

"I found a green zircon that I didn't know I had, and here is the story. In 1946 the Oklahoma Mineral & Gem Society was organized. That Fall, the group made their first field trip of any importance. We all congregated at the Ashton Ranch near Medicine Park in the Wichita Mtns., (Comanche Co., Okla.) for a picnic lunch. Mrs. Ashton had coffee in the making, in a big iron kettle over an open fire. I'm quite sure I detected the aroma, five miles before we reached the place. Everyone unpacked their baskets and placed the food on tables that had been fixed under the Black Jack trees. It was a mild day with a light breeze. The trees were dressed in red, green and gold. The sun was warm and sky bright blue. Octobers bright blue weather.

"After lunch the group hiked to the hill where the old zircon mine was located. Some of the members followed a little wash and found some nice quartz crystal points. Others went through the pasture and collected cactus. It was rather a steep climb up the old hill. The hills in that area are red and topped with pinkish red granite. We found the old mine shaft which was partly filled with water. It wasn't long until all the members were busy digging and scratching around in the debris that had been dug from the mine.

"The zircons were brown and we found them in a matrix of rotten granite. Most of the crystals were small but a few were found from ½ to an inch in diameter. It wasn't long until everyone had a nice specimen for their collection. I had a little grape basket and I picked up scrappy pieces to partly fill it.

"On our return home—the good specimen was added to my collection. The basket was set back in the garage and there it collected dust. Just last year—the thumbnail bug bit me—and I started looking through the accumulation of years—hunting for little bits of this and that to fill a thumbnail box. I spent the whole summer collecting in my own rock pile. Eventually I came to the basket full of granite and dust. I selected a nice little specimen for my box. I thought—while I was at it—I would fix some extras for swap. I got the pliers and pinched off a bit of surplus material here and there—then I saw a bit of

bright green. I hurried in the house to get my 15x glass for a better look. Sure enough—it was a tiny green zircon! It has a favored place in my T/N box.

"Just recently I heard that a group of Junior members of the Okla. Society visited the mine. They fixed a screen then with rope and bucket drew water from the mine shaft to wash and screen the gravel. Some very nice crystals were recovered—among them a few green zircons."

OREGON — Chromite, a nice black mass coming from Grants Pass, Josephine Co., Ore., was donated to us recently by Multnomah Minerals, Box 7131, Multnomah, Ore.

PENNSYLVANIA — "I am sending you a specimen which was picked up with many others near the Delaware River at Morrisville, Bucks Co., Pa., on what appears to be some kind of dried-up waterway. Believe it is a limonite concretion filled with marcasite or pyrite sand —draw your own conclusion. Some are filled solid with sand, others half-empty, and a few are hollow. These concretions, if that's what they are, are no beauties, but do think they are interesting."—card dated May 12, 1955, from M. L. Ritter, RD 2, Langhorne, Pa.

The specimen received was a dark brown, flat limonite geode. A geode is a hollow nodule (not a concretion).

RHODE ISLAND—D. S. Wrathall, 47 Common St., Providence 8, R. I., sent us recently a copy of "Rhode Island Motor Trips" (measured mileage and travel time), a 28 page publication issued by Rhode Island Development Council, Providence, R. I. The publication is especially recommended as it leads to some of Rhode Island's beaches, mineral localities, and points of geological interest.

SOUTH CAROLINA — Gold-bearing pyritic quartz occurring as veins and stringers in gneiss has been mined at Saluda, Saluda Co., S. C.

SOUTH DAKOTA—Mrs. Ed. Olson, Box 425, Beresford, S. D., in her letter dated Sept. 20, 1955, sent in following item:

"At Fort Randall Dam on the Missouri River (at Pickstown, Charles Mix Co., S. D.) I found large pieces of pyrite in shale and many small loose pieces on each side of a new road. They roll out when the shale is crushed with the fingers, and picking was easy."

TENNESSEE—Miss Juliette Desport, 1229-17th Ave. S., Nashville, Tenn., sent us a slab of polished pink marble from the marble quarries at Knoxville, Knox Co., Tenn. Her letter dated Aug. 17, 1955, has this paragraph:

"I am sending you a slab of Hamil Pink which I think is the most beautiful of Knoxville marbles. Sometimes it happens that the pink and the black are both of a very deep shade, a good deal deeper than the sample I am sending, nevertheless, this is the way it usually is."

The "black" in the sample received is talc which at one end of the specimen forms an aggregate of lustrous dark silvery plates.

TEXAS — Fred Blackmar, Box 351, Luling, Texas sent in the following note, dated Sept. 27, 1955:

"Just a short note along with my subscription renewal to say how much I enjoy R & M. I thoroughly enjoy the section on localities and also those localities given in News of the Societies. Hope to visit many of them someday in my work as a mining geologist (after leaving the Naval Air Corps).

"A note now on a locality in Texas. I found a good sized pocket of milky quartz xls (up to 1½ inches in diameter) at Enchanted Rock, a batholith, which is located some 25 miles SW of Llano, in Llano Co., Texas. The xls show excellent terminations and occur loose in disintegrated coarse-grained, silica-rich granite.

"Will say again how much I enjoy R & M and will send news of other locales at a later date."

UTAH—The following letter was received some time ago but unfortunately it got "lost" on us and was just recently found. It is dated March 20, 1955, and

comes from Oliver A. Mason, 319-26th St., Ogden, Utah.

"Am sending you a Dugway nodule from the Dugway Mts., south of the Army Proving Grounds in Toole County, Utah.

"In digging I hit a circular pocket about 16 inches deep and 12 inches diam. This nodule was near the center and the only one. The pocket was filled with a light cream colored very fine powder. The wind was mild but tossing some powder up, it turned to dust. I did not even have a piece of paper to wrap up some of the powder, and being a hot day my hanky was too wet to use. I have a small carrying case with vials, bottles, envelopes, and small plastic bags. In loading the car the case was overlooked so no sample was taken of the powder. I was wondering if you could identify it from the small amount on the nodule?

"The location is several miles west of Topaz Mt. and the big Dolomite cliff. The dolomite outcrops in several places to and beyond the nodule location. Some topaz has been found along this distance but it is badly checked, dark colored and full of inclusions. No clear ones have been found.

"Could the powder possibly be eroded dolomite? When the pocket was opened the powder started to run and I dug it (or scooped) out with my hand. The color changed sometime after being exposed to air.

"May I trouble you with one more thing? Will you kindly put in some edition of R & M a discussion and definition of geodes and nodules. The rockhounds here are having an argument, some say all are geodes, some all are nodules, some that geodes are hollow and nodules are solid."

The specimen received is a quartz geode whose interior is lined with bluish-gray chalcedony. The powder attached to it is marl (a soft earthy deposit of calcium carbonate containing a little clay).

Geodes are nodules which when broken open are found to be hollow and the cavity lined with one or more minerals. They are described elsewhere in this issue.

VERMONT—Wm. H. Robbins, RFD 1, Hampton, Conn., sent in a specimen of dark gray basalt containing pale brownish glassy striated masses of labradorite. The locality for the specimen is Bridgewater, Windsor Co., Vt.

VIRGINIA—In his letter, dated Sept. 12, 1955 Hunter Ware, 301 Ave. E, Virginia Beach, Va., sends in the following:

"I read with interest the item in World News (R & M, July -Aug. 1955, p. 375) by Mr. Davis on Virginia greenstone. I thought you might be able to use this item in connection with it.

"Greenstone occurs on Mt. Stony Man in Shenendoah National Park, Va., near Skyland (Page County). Native copper occuring in the greenstone was mined near the top of this mountain for several years, around 1850. In earlier times the Indians secured copper for their axes and ornaments from this area. The mine is reached by a nature trail to the mountain's summit, and the exact location is given in a leaflet which is supplied at the beginning of the trail.

"The copper occurs in the form of thin plates along with azurite, malachite, and possibly other copper minerals. Some quite attractive specimens can be found.

"Asbestos also occurs at Skyland in small veins."

WASHINGTON—Mrs. L. R. Haggard, Copper Mountain, B.C., Canada, sends in some interesting notes in her letter, dated Aug. 26, 1955, and sent from Missoula, Mont. Her renewal was also inclosed.

"Hope our renewal is in time to keep R & M coming without an interruption. Would hate to miss an issue even tho I have not been able to read or see ours since early spring.

"My husband has been out on exploration for the Granby Co. since May and I have been traveling with him.

"It was quite exciting visiting all the uranium strikes in eastern Washington. The old gold rush days couldn't have been better as far as excitement is concerned. The autunite xls from the Dahl ranch near Mount Spokane (Spokane Co.,

Wash.) are really fabulous but unobtainable except for some blobs of green flakes found at a pegmatite near there. Those in the mine proper are a mass of crystals and very beautiful to see. How I would love to have one like them!

"Long and continued success with R & M. (Continue sending R & M to Copper Mountain, will pick them up when the snow flies.")

WEST VIRGINIA—Red masses of fossiliferous hematite (fossil ore) have been found in the South Fork Mountains, of Pendleton Co., W. Va.

WISCONSIN—Some interesting specimens of dark bronzy marcasite xls on dark brown drusy sphalerite have come from the lead mines at Hazel Green, Grant Co., Wisc.

WYOMING—John S. Albanese, P. O. Box 221, Union, N. J., has sent R & M a most interesting specimen from Wyoming. It consists of tiny, black xls of pyrolusite on massive milky quartz.

"Pyrolusite xls on milky quartz, Mineral Hill, Marshall (Albany Co.), Wyoming."—on label.

CANADA—John S. Albanese, P.O. Box 221, Union, N. J., has sent in another interesting specimen—a mass of orange cancrinite associated with pink calcite and black biotite. The locality is French River, Ontario, Canada.

CEYLON—From the gem pits at Ratnapura, Ceylon, we have a roughly xled, pale purple amethyst, that was sent in by Fritz G. H. Carlson, 12 Beach St., Fairhaven, Mass.

GERMANY—About 100 years ago, a brown, manganese-aluminum garnet was found in granite at Spessart, near Aschaffenburg, Bavaria, Germany, and named spessartite after the locality. John S. Albanese, P.O. Box 221, Union, N.J., has sent us a specimen from this locality —a brownish spessartite xl imbedded in pinkish granite.

KOREA—A new mineral, named suanite has been found at the Hol Kol gold copper mine, Suan County, Korea, in kotoite marble associated with calcite, szaibelyite, kotoite, spinel, and clinohumite. Suanite, is a magnesium borate, white, luster silky to pearly, hardness 5½, sp. gravity 2.91. Its name is for the locality (—THE AMERICAN MINERALOGIST, Sept.-Oct. 1955, p. 941—Dr. Walter F. Hunt, Editor, University of Michigan, Ann Arbor, Mich.).

SCOTLAND—Our good friend in Scotland, Sandy Ramsey, 1015 Aikenhead Road, Kings Park, Glasgow, S4, Scotland, has some more news for us. In his letter, dated Sept. 28, 1955, he writes:

"This year has been my worst from a collector's point of view, and I have had more requests than ever from R & M subscribers for Scottish specimens. I have a list here and no minerals whatsoever to send to any of them. Until this year I have had a steady flow of material, especially prehnite, to give away but it is many moons since I got any prehnite at all, and the other minerals aren't good enough to waste postage on.

"Have had calls from visiting American rockhounds this year and have found them to be most pleasant, but unfortunately couldn't get them much so had to dig into my private stock and that's going down too soon.

"My pal was masterminding our holidays this year, consequently we did little collecting; I did pick up a little amethyst at the quarry near Newburgh, Fife, Scotland, but it was very poorly xled. Collected at the quarry some quartz, also, with goethite inclusions but the vugs were small—also found there some blue agates.

"Some months ago I cut some small Usan agates (from Usan, Forfarshire, Scotland) and polished them. About two weeks ago I was showing them to friends and one said "What a pretty candle!" and sure enough there was a white candle with a red flame and a pink outer flame in a light blue background, plain as plain to see but I had never noticed it before. I am going to try and get it photographed and will send you a print of it.

"I am enclosing a cutting from a newspaper which I should have sent you before when the news was 'hot', it concerns a find of kasolite, maybe it can be of use to you."

The clipping is taken from the May 12, 1955 *Scottish Daily Express,* and has reference to Dr. C. F. Davidson, chief atomic energy geologist, who was investigating a uranium strike on a 2,900 ft. mountain (Brinn Odhar) near Tyndrum, Perthshire, Scotland. The strike was found by two Lanarkshire brothers, James and Archie Sinclair, of Kirkmurhill Scotland. Their find was reported to Dr. Davidson who has travelled the world in search of uranium, personally travelled to the locality to investigate the first-ever Scottish discovery. Unfortunately the find was a small one and not worth mining. He found, however, that the deposit contained a rare mineral—kasolite—a lead uranium silicate which had never been found in the British Isles before.

SPAIN—Juan Montal, Plaza Sagrado Corazon 1, Villafranca del Panades, Spain, has sent in a black mass of chromite coated with emerald-green zaratite. The locality for this interesting specimen is Ojen, Malaga Province, Spain.

VENEZUELA—The following note, dated July 13, 1955, was sent in by John R. Adams, % Mene Grande Oil Co., Barcelona, Venezuela.

"All along the northern coast of Venezuela is the 'Coastal Cordillera' which is for a large part limestone and gypsum. There are available to the collector many varieties of crystals—including gypsum crystals and small quartz crystals. Some silver has been found but I don't know what type. I have seen some very fine thick plates of glass-clear gypsum but as yet I don't know the source. I hope to find out at a later date. (Note:—I've only been down here six months)."

The only one!

Editor R & M:

The only Rockhound magazine worthwhile—R & M!

Stanley Tobla
823 Pinewood Rd.
Union, N. J.

Aug. 30, 1955

R & M comes first!

Editor R & M:

Have just sold a fine specimen to a rival collector in order to obtain money so that I might renew my subscription to your fascinating magazine. Would do this under no other circumstances.

Anthony Bell
35 Larch St.
Providence, R. I.

Sept. 9, 1955

Ham Operator calling!

Editor R & M:

I am sixteen year old and have been collecting for about three years. Last year I dropped mineralogy but since I started chemistry in school my interest has been renewed. I am an amateur radio operator (my call is K2HXR), and would like to meet other hams who collect minerals."

Richard Brandt
Twin Lakes, RFD #1
Ridgefield, Conn.

Oct. 17, 1955

Made good contacts!

Editor R & M:

ROCKS AND MINERALS has been invaluable to me in that I have made a number of good contacts through ads or articles in the magazine. I have also been contacted and have made several nice exchanges. A lot of us amateur collectors owe you a lot for the assistance obtained from ROCKS AND MINERALS.

Roy M. Fitts
39 E. Elm St.
Yarmouth, Maine

Aug. 28, 1955

A pleasure to write out renewal check!

Editor R & M:

It is always a pleasure to write out this annual check, for there is always so much that I receive in return.

B. F. Grunzig
38 Livingston Ave.
Avenel, N. J.

Oct. 17, 1955

R & M and Texas—Both big!

Editor R & M:

Here in Texas we are used to, and like, big things, and your ROCKS AND MINERALS is just that. Here is my renewal for another year.

Joe F. Mikolaj
4213 Sinclair Ave.
Austin, Texas

Aug. 31, 1955

FIRST WINNER OF THE WOODRUFF TROPHY

The Woodruff Trophy for the best individual mineral display was unveiled at the American Federation and Eastern Federation show in Washington, D. C. last September. Pictured above are the first winner and the donor. Mrs. A. F. Dosse of Fontana, California, was the first winner of the Trophy and was awarded the plaque for the best mineral display at the National Convention in Washington, D. C.

The donor, Mr. Harry L. Woodruff of Washington, D. C., is well known to the readers of ROCKS AND MINERALS. Mr. Woodruff is not only prominent in the American Federation of Mineralogical Societies, being Vice-President, but he is also known for his untiring efforts in behalf of the Eastern Federation. Mr. Woodruff, the father and founder of the Eastern Federation, was also President for the first two years, 1950 to 1952.

COMBING THE CLIFFS OF NOVA SCOTIA

John F. Mihelcic

16543 Appoline, Detroit 35, Mich.

High above the thundering tides, the cliffs of Nova Scotia beckon to the mineral collector and gem cutter, hinting of hidden treasure, to reward the diligent. If you ply your search with zeal, your discoveries will range from A to Z, or, in our parlance, from agates to zeolites.

The practical thing to do in planning any collecting excursion is to read the available reports, professional and amateur. Both are valuable to you. The Department of Mines of Nova Scotia has published a mineral and geological guide book, which may be in the larger reference libraries. It will direct you to areas that are known to be the source of specific minerals. By local inquiry, and your own search, you will be successful in direct proportion to the time you have available.

While Lil (my wife) and I spent the better part of two summers trudging the shore line and dodging tides, it may be that your time is more limited. In that case, confine your search to the Minas Basin and Channel. There, sections of the high cliffs crack off each year to expose new crops of minerals for your collecting pleasure.

The coal fossils at Joggins are interesting specimens. You are likely to find them along the shore. Usually, an ever present group of boys is apt to aid you in your search. Next in order is the area about Parrsboro. Several cabin courts are available as headquarters. Partridge Island terminates a peninsula, and is a good source of zeolites. The salmon color of the zeolites is a good indication that they have come from this side of the Minas Basin. Practically all we collected on the other side were white. Since this is a favorite spot for collectors, expect to find few top quality specimens. However, it is a good training ground, for it is easily reached, and the amount of zeolite concentration is considerable. Before you go out, check at Parrsboro or in the newspaper for the tide timing. We found that we could cover three miles of shoreline between high tides with safety, providing there were no deep gullies back of us. Since these fill in before the tide reaches the foot of the cliffs, the too confident collector can be cut off even tho the tide seems well out on higher ground. At high tide, there is no beach and your chance to scale some of those precipitous cliffs is negligible.

The next point at which we found collecting good was at Two Islands. The analcite and natrolite were particularly nice, with the color ranging from salmon to yellow to white. By good collecting, we mean that you are apt to find a couple good cabinet specimens, several seconds, and a lot of "pound" material. Expecting more than that just isn't reasonable. Of course once we did find a three foot panel of analcite glued onto a mighty cliff fragment and became delirious to the point of having to race back to high land ahead of the tide. The fragments along the beach may contain fair sized pieces of vein agate with yellow-brown tones predominating. At times the zeolites are found perched on a slab of agatized material. We have gazed longingly at clusters of fine material, thirty feet up the cliff face, that seemed to be suspended, undecided whether to fall or not.

We made our headquarters at Island View Court at Lower Five Islands because from there we could range from Truro to Parrsboro, and because Bruce Patterson is tolerant of the mineral collecting addict, for he has become one himself. He'll know localities for milky quartz, barite, agate and zeolites, or he may be willing to sell some of his surplus. From this area, came our finest heulandite specimens, curious silicified zeolite veins that polish, as well as one vug of light amethyst on a lining of mottled agate. The only one we saw—but one was enough. Somewhere there is another, for it is axiomatic, that it matters not how good your specimen is—somewhere there is a bet-

ter. The stilbite specimens are not as large as they are across the Minas Basin, but they come in a variety of tones of brown. We have polished some of the crude shore fragments into truly first water cabinet specimens. Try it and amaze yourself. There is some satin spar (gypsum) crisscrossing some of the cliffs, but the major deposit is across the Basin.

Your collecting (shorewise) starts at Cape Blomidon and extends to Digby Neck. To get to the (very scarce) source of amethyst at Cape Blomindon, requires a rugged hike of several miles, after leaving your car at the end of the road; the services of a skilled man with a boat; or a guided climb over the cliff from Scott Bay. If your time is short, forget it, and concentrate your efforts between Canada Creek and Margaretsville.

A series of fishing villages dot the coast, about five to ten miles apart. The specimens that you find near Canada Creek will have the largest crystallization and may be glassy clear. Be prepared for long stretches of hard travel, and little evidence of the existence of choice specimens. But, if your experience matches ours, your very soul will be thrilled with the sight of three inch long stilbite crystallizations. Some of these will be green with sea weed and coated with dirty salt, but, once they are washed with warm water and a bit of chlorox, they are fit for the most fastidious cabinet display. Better stilbite, we have not seen, and even that was so scarce that we almost did not see it.

As you travel down toward Margaretsville, the zeolites tend to fill in the amygdules of the trap rock instead of seams, and, of course, become smaller in size. The larger openings are apt to produce pretty vugs of nice clear crystals. The trap rock may be fairly peppered with them. Careful selection will result in thumbnail specimens that will be a joy to behold.

The area about Sandy Cove on Digby Neck is rich in these smaller amygdule inclusions as well as seams of chalcedony from a quarter to two inches in width. Careful tracing of some of these seams will bring you to sections that make good cutting material. Most of it will be drab.

The staurolite on the Jordan river near Shelburne was quite plentiful. We did not do any great amount of digging there but hope to return some day to seek out better pieces. The area about New Ross is another return engagement, for we did get some nice specimens of molybdenite. We failed to locate the manganese zone with its pyrolusite. Since pyrolusite can exist in quite dramatic formations, it will be worth searching out.

To those who would like to spend a summer vacation time in a moderate temperature area and would like to collect with reasonable assurance of returning with nice specimens, we recommend the section of Nova Scotia we have discussed. We might also say that the drive around is most satisfying to the car seat geologist or tourist. When you return you'll point with pride to "This is the one I pried loose as I combed the cliffs of Nova Scotia."

LOOKING BACK TWENTY-FIVE YEARS AGO

in Rocks and Minerals
Dec. 1930 issue

Howe Caverns, by Harold Orville Whitnall, pp. 109-115. An intensely interesting illustrated article on New York's largest caverns.

The color of amethyst, by George O. Wild, pp. 116-118. A discussion on what gives amethyst its purple color.

A rock collection, by M. R. Thompson, pp. 120-122. Mr. Thompson, a rock enthusiast, points out some interesting features of rocks.

A check list of minerals from Kelly, New Mexico, by Herman Wuestner, pp. 127-131. The mining camp at Kelly, N. Mex., is rich in minerals and the article describes many of them.

THE SAND COLLECTOR

CONDUCTED BY PETER ZODAC
PEEKSKILL, N.Y.

Quartz sand from Chidester, Ark.

"The white sand sent you is from a vein in a red clay bank at Chidester (Ouachita Co.), Arkansas. Hard red clay was above the vein and below it. The vein came to the surface of the banks in several places and was not continuous, and the thickness of the vein varied in places from about one inch to about six or eight inches as well as I can remember. The vein is in a highway cut just above my grandfather's old place and I used to play with the white sand when I visited my grandparents when I was a small boy."—letter dated Aug. 15, 1955, from Nolan De Laughter, Box 1404, El Dorado, Ark.

The sample received is a fine grained gray sand and consisted entirely of colorless quartz.

Beach sand from Fort Bragg, Calif.

From a beach in Mendocino County, Calif., and on the Pacific Ocean, we have a sand sample that was sent in by Lu Watters, Box 88, Cotati, Calif. The sample is a fine grained dark pinkish sand. It consists of pink to reddish garnet, colorless to smoky quartz, green epidote, and colorless zircon that fl. orange under the Mineralight. A small amount of lustrous black magnetite is also present in the sand.

"Enclosed is a sample of sand from a small unnamed beach about 25 miles N. of Fort Bragg on the California coast. This material was concentrated in small colorful streaks amid the common ordinary sand of the beach by the 'panning' action of the waves."—letter dated Sept. 14, 1955, from Mr. Watters.

Beach sand from Sarasota, Fla.,

Mrs. O. E. Looney, Lincolnville, Me., sent us a few months ago a sand sample from the beach at Sarasota, Sarasota Co., Fla. The sample is a fine grained white sand consisting almost entirely of colorless quartz. A few fragments of white sea shells are also present in the sand. The beach is on the Gulf of Mexico.

Brook sand from Richmond, Ind.

Last summer the Rev. Wm. J. Frazer, of Moosic, Penn., visited some localities in Indiana and at one he collectel for us a sand sample which is medium grained and dark gray. The sand consists of quartz (smoky, colorless, reddish), pink feldspar, some black magnetite, gray clay and gray limestone.

"Sand from stream edge of Blue Clay Falls (Wayne Co.), Indiana—a famous trilobite locality (I didn't get any) within a few miles of Richmond, Ind."— label with sand.

River sand from Ross, Ky.

From the southern bank of the Ohio River, at Ross, Ky., we have a sand sample that was collected for us last summer by the Rev. Wm. J. Frazer, of Moosic, Penn. The sample is a very fine grained, dark brown sand. It consists of quartz (brown, colorless), brownish feldspar, pinkish garnet, black magnetite, and silvery muscovite.

"Sand is from the southern bank of the Ohio River, near Ross, Ky. (Incidently, the Ohio River belongs to the State of Kentucky—the State of Kentuckey's northern border is along the shore line of Ohio, low-water level mark)."—on

card dated Aug. 28th, 1955, from the Rev. Frazer.

In his letter dated Sept. 7, 1955, the Rev. Frazer wrote;

"We've been in ROSS, Indiana, and driven through ROSS, Ohio, but the sand sample sent you comes from ROSS, Campbell County, Kentucky, on the southern shore of the Ohio River. Yes, Ross, Ky., is very small hamlet but a place where we picknicked with parishioners from the Newport, Ky., church, and where our two children, Sheila and Neil, had their first experience at water skiing."

Quartz sand from Winnfield, La.

From Winnfield, Winn Parish, La., we have a sand sample that was sent us by Glen E. Kiser, Douglass, Kans. The sample is a fine grained light brown sand consisting chiefly of quartz (brownish, colorless) and some silvery muscovite.

Quartz sand from Winchester, Mass.

Mrs. O. E. Looney, Lincolnville, Me., has donated a sample of sand which comes from Winchester, Middlesex Co., Mass. It is a coarse grained, gray sand, and consists chiefly of quartz (smoky, some white) and feldspar (pinkish, white) with smaller amounts of silvery muscovite, black tourmaline and a tiny amount of black magnetite.

"From Blueberry Mt., Winchester, Mass., 1953."—on label.

Beach sand from Biloxi, Miss.

From the beach at Biloxi, Harrison Co., Miss., the conductor of this department has a sample of sand which he personally collected on May 6, 1953, while on a visit to the little city. The beach is on the Gulf of Mexico and the sample was collected right in front of the Buena Vista Hotel. The sample is a medium grained gray sand—all colorless quartz.

Creek sand from Stickley Point, Mo.

This sample was sent us by Glen E. Kiser, Douglass, Kans. It is a coarse grained, brownish sand and consists chiefly of quartz (smoky, colorless) and brownish limonite. Some whitish feldspar and black magnetite also present.

"Sand is from Blackbird Creek, 2 miles north of Stickley Point, N. W. Adair Co., Mo."—on label.

Scheelite sand from Neveda

Some few months ago we received a sand sample from Roy Shoemaker, 1827 W. Drescher St., San Diego 11, Calif., with the following item:

"This scheelite sand I received from C. Winston Churchill, Laws, Calif. He took 74 lbs of it from a single crevice on the mountain in the Rawhide Mining District, Mineral Co., Nevada."

The sample is a coarse, gray sand, and consists entirely of smoky gray scheelite which fl. golden yellow under the Mineralight.

River sand from Lancaster, N.H.

"In a separate envelope I am sending you a sample of sand from the south bank of the Israel River at Lancaster (Coos Co.) in northern New Hampshire.

"I judge that the sand is from the first post-glacial level of the river, about 30 feet above the present high water mark. The Israel River has its head-waters on the north side of the Presidential Range of the White Mountains and runs through a series of highly metamorphosed ancient sedimentaries that flank the north and west of the Presidential Range."—letter dated July 15, 1955, from Paul M. Tilden, Warner, N. H.

The sample is a medium grained, dark gray sand. It consists of smoky quartz, pinkish and white feldspar, black magnetite, black biotite, silvery muscovite, black tourmaline, and some green epidote.

Biotite sand from Delanco, N.J.

On July 26, 1955, we received a sand sample that was sent us by Arthur Grieves, 912 Burlington Ave., Delanco, N. J. It is a medium grained, lustrous black sand consisting chiefly of lustrous black biotite with smaller amounts of smoky quartz and much smaller amounts of silvery muscovite, black magnetite, and pinkish feldspar.

"Sand from the Delaware River, Delanco, N. J. It is a dredged sand—deepening the channel is now going on."—on label. (Delanco is in Burlington County).

River sand from San Cristobal, N. Mex.

Some few months ago while on a

western trip, Mr. & Mrs. Geo. C. Barclay, Box 433, Newport News, Va., collected for us a sand sample from the Rio Grande at San Cristobal, Taos Co., New Mex. They even enclosed a map with the sand, showing its location.

The sample is a fine grained, dark brown sand. It consists chiefly of brownish quartz but smoky and colorless quartz also present, including reddish chalcedony. A small amount of black magnetite and green olivine also present.

Building sand from Middle Hope, N. Y.

Along the west edge of Hwy US9W, at Middle Hope, Orange Co., N.Y., (4 miles north of the northern limits of Newburgh) is Brooker Sand and Gravel Pit, a large diggings. Three years ago the conductor of this colum collected a sand sample at the pit—an average sample from the excavated material. The sample is a dark, gray, medium grained sand and consists of quartz (colorless, smoky, some white and brownish), with almost an equal amount of dark gray sandstone. A very minute amount of black magnetite also present in the sand.

Quartz sand from Stillwater, Okla.

This is a medium grained, brown sand, and consists entirely of brown quartz. It was donated by Glen E. Kiser, Douglass, Kans.

"From Hwy 51, S. E. of Stillwater, Payne Co., Okla."—on label.

Geode sand from Morrisville, Pa.

"I am sending you a specimen which was picked up with many others near the Delaware River at Morrisville, Bucks, Co., Pa., on what appears to be some kind of a dried-up waterway. Believe it is a limonite concretion filled with marcasite or pyrite sand—draw your own conclusions. Some are filled completely with sand others are half empty and a few are solid. These concretions, if that's what they are, are no beauties but do think they are interesting."

—card dated May 12, 1955, from M. L. Ritter, Rd. 2, Langhorne, Pa.

The specimens are limonite geodes containing fine grained, gray sand which consists of milky quartz and brassy-yellow pyrite.

Quartz sand from Turkey Ridge, S. D.

Mrs. Ed. P. Olson, Beresford, S. D., collected this sample for us. It is a coarse grained, grayish sand consisting chiefly of colorless quartz (some smoky, also brownish) with smaller amounts of pinkish feldspar (some white also present).

"Sand from Turkey Ridge, Turner Co., S. D."—on label.

River sand from Johnson City, Texas

From the Peidernales River at Johnson City, Blanco Co., Texas, we have a sand sample that was collected for us by Mrs. Ruby Renfro, 2901 Bomar Ave., Fort Worth 3, Texas. The sample is a coarse, reddish gray sand consisting chiefly of smoky to reddish quartz with smaller amounts of pale pinkish feldspar.

Oolitic sand from Promontory, Utah.

Last March Oliver A. Mason, 319-26th St., Odgen, Utah, sent us a sample of oolitic sand from a new location in his state. The sample is a medium grained, gray sand consisting entirely of calcite concretions (all nicely rounded and gray to white in color—fl. greenish-yellow under the long wave).

"I am sending another sand sample from Great Salt Lake. It is just as I scooped it up with my hands. The location is on the west side of Promontory Point, north of the south end of the Southern Pacific Railway trestle across the Great Salt Lake.

"To get there one has to go along the east side of Promontory Point to the south end and then turn north. It is about 90 miles from Ogden. The location is in Box Elder County, Utah."—letter dated March 30, 1955, from Mr. Mason.

Quartz sand from Shot Tower Hill, Wisc.

"Sand scraped from sandstone rocks in the Shot Tower State Park near Spring Green on the Wisconsin River west of Madison, Wisc. A very interesting place dating back to 1830 when a shaft was dug 187 ft. down thru the sandstone then a tunnel from its bottom extending as many feet to the river. Lead mines were not too far away and lead was hauled to the top of the hill, melted, and dropped thru the shaft where it hit water in the bottom. Shot

was then taken from the water and loaded on barges and floated down the river. There was no sign here preventing one from taking sand samples so I have collected one for you.

"This was one of the interesting places visited this summer."—lettter dated Aug. 30, 1955, from Mrs. John Roder, Rt. 7, Hot Springs, Ark.

The sample is a fine grained brownish sand, consisting entirely of quartz (brownish, colorless).

Spring Green is on the north side of the Wisconsin River and in Sauk County; Shot Tower Hill is on the south side, in Iowa County.

Beach Sand from Shag Harbor, N.S., Canada

"A friend of mine recently visited her home town in Nova Scotia. I asked her to bring back some sand which she did and I am sending it on to you."—letter from Mrs. Edward Sibley, 266 Chapman Pkwy, Hamburg, N. Y.

The sample is a fine grained gray sand. It consists of quartz (colorless, smoky), feldspar (whitish, pinkish), silvery muscovite, and some black biotite. A tiny amount of black magnetite also present.

The sand comes from a beach on the Atlantic Ocean at Shag Harbor, N. S., Canada.

Beach sands from Slapton Sands, England

Slapton Sands, Devon, England, is on the English Channel. From the locality we have a sand sample that was sent us by Sandy Ramsay, 1015 Aikenhead Rd., King's Park, Glasgow S4, Scotland.

The sample is a coarse grained, reddish sand. It consists chiefly of red sandstone, quartz (colorless, gray, reddish), and sea shells (white, brown, blue). Some gray mica schist and gray sandstone also present.

"A three mile beach, Slapton Sands, Devon, England.

"This was the springboard from which Eisenhower and Churchill watched the lunching of the American attack on "D" day.

"A twelve mile sea front was given over to the American command and the entire native population evacuated. Hundreds of thousands of American troops were trained here under real war conditions as many shell shattered houses and walls still attest, and from here the huge American Armada sailed to liberate conquered Europe.

"The Americans have raised a fine memorial on the bay to commemorate this historic event."—on label.

River sand from Allahabad, India

"I am enclosing a sample of sand just received that comes from the Ganges River at Allahabad, India. Have been adding to my sand collection a little at a time. Now have 3,187 sand samples, only 13 more to go for 3,200. I have contacted several new collectors through my ad in R&M and have started several on the way: I hope they enjoy sand collecting as much as I have in the past 8 years. I would like very much to get in touch with some one connected with the South Pole Expedition. If I could get some sand from there I would have nearly covered the ends of the world."—letter dated Sept. 24, 1955, from Chas. R. Lamb, Long Beach, Wash.

The sample is a medium grained, silvery-gray sand. It consists chiefly of silvery muscovite and smoky quartz with some black biotite, white feldspar and a tiny amount of pink garnet.

Shell sand from New Caledonia

New Caledonia, a French possession in the South Pacific, is 248 miles long by 31 miles wide—one of the largest islands in the Pacific. Its capital is Noumea (pop. 14,000) and is the 2nd largest town in the South Pacific; it is situated near the southwest corner of the island.

From the beach at Noumea we have a sand sample that was sent us by Max Haleck, Pago Pago, Tutuila, American Samoa. The sample is a medium grained, light brownish sand consisting almost entirely of sea shells (brown, white, gray). A tiny amount of black magnetite also present.

Beach sand from Prestwick, Scotland

Prestwick, on the Firth of Clyde, is on the west coast of Scotland. From its beach we have a sand sample that was sent us by Sandy Ramsay, 1015 Aikenhead Rd., Kings Park, Glasgow S4,

Scotland. The sample is a fine grained reddish-brown sand. It consists of quartz (smoky, colorless, brownish, reddish) and pinkish feldspar plus a very small amount of black magnetite.

"Beach sand, Prestwick, Ayrshire, Scotland. The U. S. Air Force has a base here, the only all the year round fog free airport in the British Isles. The town of Prestwick is a holiday resort and residential centre."—on label.

Ilmenite Sand From Umkomaas, Natal

Umkomaas, in southern Natal, South Africa, is on the Indian Ocean—From the beach at Umkomaas (which is 30 miles south of Durban) we have two sand samples that were collected for us by F. C. M. Bawden, P. O. Box 1167, and Mrs. I. N. Gush, P. O. Box 1128, both of Johannesburg, South Africa.

The first sand (ilmenite sand) is a fine grained, brown sand. It consists of sea shells (brown, white, pink) with black lustrous ilmenite, colorless quartz, pink to red garnet, and black magnetite.

"Beach sand (ilmenite band) from Umkomaas, Natal."—on label.

The other is a normal beach sand, same as above but has less ilmenite and the grains are coarser.

Building sand from Bagillt, Wales

Bagillt is a little town in Flintshire, North Wales. From Bagillt we have a sand sample that was sent us by Harold Poole 315 Wadsworth Ave., Philadelphia 19, Pa. It is a fine grained, red sand consisting chiefly of reddish quartz plus some dark gray sandstone.

"My cousin, who lives in Rhyl, Wales, was visiting Bagillt and got the sand sample. This Bagillt sand is used for building purposes and is of glacial origin, according to the Geology of Liverpool, Wirral,' and part of Flintshire,—a memoir of the Geological Survey of England and Wales."—letter dated July 11, 1955, from Mr. Poole.

QUICKSAND - - - WHAT IS IT?

By Chas. S. Knowlton
143 N. Acacia, Fullerton, Calif.

One day while I was preparing a number of sand samples to send to a correspondent who does not care what kind of sand it is, just so that he gets it, I happened to think of *QUICKSAND* and I wondered how many Sand Collectors might have samples. And I also wondered how many would *KNOW* anything about them. I have yet to meet the first adult who did not know of quicksands but I have yet to meet the first person who *KNOWS* anything about them. I still have hopes of meeting such a person.

As Peter Zodac, Editor of ROCKS AND MINERALS, is a major Sand Collector I have wondered if he might be interested in a non-technical article about them, and covering only a very small part of the world.

It seems probable that beds of quicksand, Q/S, may occur in any of the sandy beds of rivers in alluvial plains below hills or mountains. They certainly are plentiful in the sandy rivers and even in small streams of the Pacific Coast and in the streams that flow east and south from the Rocky Mountins.

With quicksands so plentiful and as they cause so much trouble it seems strange that much more has not been written about them. An article in the one magazine that I have happened to see the statement is made that it is necessary to have a living spring under sand and before it becomes *QUICK*. I feel certain that if the author of that article were to spend a wet winter where he could see plenty of quicksand miles from any possible springs that he would be willing to modify that statement.

I can well start by relating a few of my early experiences. The summer that I was six years old we were living in a small town in Southern Nebraska where my father had a carpenter and wagon making shop. In late summer my parents hired a livery team and buggy and they drove east a few miles to visit some

friends. Not too far from home they had to ford a placid river that was shallow but that seemed to me to be quite wide. After staying all night and having started toward home there were indications that a storm was impending. There were but few houses along the road but as we neared the river we came to a small house with a large barn. As we drove into the barnyard the farmer was just closing a pair of rolling doors. He opened them and motioned us to drive in; just as a hard wind and hail started.

The storm cleared while the sun was fairly high and while we were thinking of starting toward home a man rode a horse into the barn and he suggested that as the river had started to rise that we should start immediately. This man had just crossed the river and he said that soon it would be impossible to ford the river and he volunteered to pilot us across. And he said that there was always danger of quicksand when water was high. He headed up stream and we got across without getting stuck. But the water was coming in considerable waves, but not high enough to flood the buggy. Before the man got across again the horse nearly had to swim.

The year that I was eight my folks moved to Anaheim, California, near where grand parents had moved a couple of years before. It was in 1886 while there was a rate war on between what is now the Southern Pacific and Santa Fe Railroads. We had to pay $10 for a full fare and half that for children.

As we crossed the Sierra Nevadas heavy snow falls slowed rail traffic and it took the train more than 24 hours to come from Sacramento to Los Angeles so we had to lay over there for two days. After we did arrive in Anaheim our grand parents drove into town for the first time in about ten days. As they drove about three miles to the northeast of town there were evidences of considerable flood damage and we were shown the approximate place where a man, team and wagon had disappeared, probably in a bed of quicksand.

In those days there were frequent floods in the Santa Ana River and many was the story that I heard about the dangers of the Q/S. My first actual experience with Q/S was in about 1891 or 92 after high water had receded so it was mostly safe to walk long the river bottom. Three boys of us were walking toward a low bank when I stepped into Q/S, not then recognizing it. I easily got back in time to stop another boy from taking more than one step in, but the other boy who had been behind came running up and he gave a jump into the Q/S where he sunk to his knees. I went a few rods to a washed out tree and broke off a good sized branch and the two of us pulled the third boy out. Not far away was solid sand again.

All of the very limited literature about quicksands describe them as mostly rounded sand grains instead of the angular grains of common sands. And a majority of them seem to think that most quicksand was 'blow sand' at some time. The rounded grains do not pack as tightly as do the angular grains. And the rounded grains also hold more water so that the saturated sands will not support as much weight as will the angular grains.

There is a well established belief that quicksands will actually suck people or animals below the surface but it is probable that they just do not resist pressure. When a person or an animal gets into Q/S and they begin to struggle they create a vacuum as they try to lift one foot out and that puts more weight upon the other foot so that if no help comes there is small chance of their getting out. If a person becomes involved he should not start struggling or he will sink the deeper.

I was recently told by a man who has worked 50 years in the Santa Ana River, as an employee of a large Water Company, that when walking in the wet bed of a sandy river that one should always carry a lath or stick five or six feet long. If he comes to a bed of quicksand and will probe the stick several feet several times that the water will bubble out and that one can then safely walk cross the sand.

I have seen numerous instances where in digging trenches for water or sewer lines they tried to go through layers of dry quicksands that would flow from so far under nearly firm upper layers that they would cave down, requiring shoring or the removal of much more material. This sand, when piled on level ground, will not make high cones like ordinary sand but will flatten to about three inches to the foot.

Perhaps the most interesting occurrence of dry quicksand that I have seen was just east of the Santa Ana River to the west of Santa Ana. A nurseryman with whom I was associated had planted both citrus and walnut seedlings on apparently good land and they were budded and grafted as usual and the scions made excellent growths. When they started to dig the walnut trees they discovered that the roots had refused to penetrate a few inches of quicksand. Instead of developing a long tap root as usual, the roots branched above the quicksand. And it took some good salesmanship to sell the unusual roots, but when they were planted they thrived better than did standard roots.

It is customary to 'ball' citrus budlings but when they started to ball these trees they found that the roots had penetrated the quicksand. But when the dirt was cut from around the ball, the quicksand run out so that the ball was in two parts so that the budlings had to be dug bare root, not a bad thing at that.

It is probable that there are but few sandy bedded rivers anywhere that do not at times have beds of quicksands, here today, gone tomorrow, as they migrate down stream when the river is in flood.

A great majority of the ocean beaches have firm sands that will hold up ships that are blown ashore, but there are times when ships have sunk out of sight in quicksands. And not infrequently when people who have been walking on firm beach sands will find themselves shoe top deep in quicksand.

An English book, "The Physics of Blown Sands and Desert Dunes," by Bagnold, and mostly about Egyptian dunes, says that angular sand grains pack solid, either wet or dry. Rounded grains, particularly when wet, more nearly tend to float and do not resist pressure. While walking among the ridges of most of the dunes the sand will be firm enough that one will not sink but that without warning one may sink nearly to his knees. That when one was out in the soft sand if he were to teeter up and down that the sand would quiver for a distance of seven metres in each direction, but that no difference could be detected with a microscope between the firm sand and the quivering sand.

As the thought about quicksand came so recently I have only had the chance to get two samples, one from the Santa Ana River and one from the place where the nursery had been raised.

And still I do not collect non-garnet sands, nor do I care for more quicksands. But I would like to read more authentic articles about how the sands do migrate.

Every pitch helps!

Editor R & M:

Throwing a little pitch toward your magazine, here's a little news that might interest you. I have brought ROCKS AND MINERALS down to the office several times to be passed around and read and it amazed me the number of people who really liked it who had no knowledge of rocks, minerals, or geology. I noticed that even our geologist liked it, for you see—I work for Shell Oil Company!

Dairl Boyd
309 W. Deming St.
Roswell, N. Mex.

Oct. 20, 1955

Precision Radiation Instruments, Inc.

Precision Radiation Instruments, Inc., Los Angeles manufacturer of radiation instruments, recently announced oppointment of Robert F. Kaufmann as vice president in charge of advertising and public relations.

Kaufmann was formerly director of advertising and public relations for Thor Corporation, Chicago. Previously he was national promotion manager for Paramount Pictures, director of network program promotion for CBS radio, and executive consultant to the O. S. Burr Corporation. He has been associated with two New York advertising agencies, Biow Agency and Donahue and Coe.

The Los Angeles firm is the pioneer in the field of manufacturing radiation instruments and is the world's largest company in that specialty.

PEBBLE PUP TO ROCK HOUND

By Helen Moore Strickland,
226 E. Mary Street,
Fort William, Ontario, Canada.

One beautiful summer day in 1942, my son Rick, then three years of age, and I walked hand in hand along the shore of Lake Superior and I made the startling discovery that he was a natural-born "Pebble Pup."

We had no sooner reached the beach when he started busily gathering prettily coloured stones and stowing them in his pockets. He soon had a beautiful assortment of jewel-like pebbles and later when preparing to leave I found myself with a little boy who stubbornly refused to part with this treasure trove. In desperation, I picked up both child and pebbles, packed them in the car and headed for home.

This was the beginning of my son's rock collection but the end of driving in the country for lazy pleasure for from this day forth all trips had to be planned with an eye for places where we could obtain more brightly coloured pebbles.

After each excursion the pebbles had to be carefully sorted and washed and the more attractive placed in a bottle of water and sealed tight. Here the beach pebbles would shine like precious jewels.

By the time my "Pebble Pup" was five years of age, we had stepped stones together, up and down most of the dried up creek beds in the district and covered most of the available beaches along the Lakeshore.

Soon he began to look farther afield and the intricacies peculiar to "Rock Hounds" became apparent.

Learning to read had opened a door of wonders for Rick. With the help of his godfather, a mining engineer, he began reading all the available geological survey reports, mining reports and books on rocks and minerals which he obtained from the Public Libraries.

With each succeeding year our rock hunting expeditions became more adventurous and produced larger rock specimens with a greater variety. We explored many of the district's abandoned mines, trudged through forest and underbrush and climbed in and out of broken down shafts armed with prospectors' picks, chisels and haversacks.

My son at fifteen is now a full-fledged "Rock Hound" who besides seeking specimens and testing them with chemicals, trades with others. He has his future settled and plans a career of mineralogy, geology and mining engineering.

Many are the experiences we have had together, while rock hunting. We have been chased upstream of a river by an angered bull while we were trying to loosen large pyrite concretions imbedded in the rock cuts; we have trudged through snow over our knees; I have lost a shoe while wading in fast running water and we have spent hours side by side digging out embedded Thunder Eggs and Agate Nodules. We have travelled the country with a true sense of appreciation such as few people experience.

Little did I realize those long years ago when we picked up the first beach pebbles that my son would advance from a "Pebble Pup" to a "Rock Hound" and that I would find the fever so contagious that I would willingly participate in this healthful occupation.

Rick describes a "Rock Hound" very aptly when he says,

A "Rock Hound" is a strange creature who usually spends his time in a normal sort of way; but when he is at work rock hunting, he walks with a strange, slow gait with his nose to the ground. If he spies some rock which is unusual, he immediately attacks it, pounds it with a hammer, then picks it up and licks it. When at a club meeting, he exaggerates to his friends and lies to rival collectors. The question he usually asks himself when he is going through a foot of snow with 90 pounds of rock on his back is, "Why can't I collect stamps?' "

Club and Society Notes

Attention Secretaries—Please submit neat copies. Give dates and places of meetings. Check names for correct spelling.

East

Mineralogical Society of Pennsylvania Field Trip September 1955

The September Excursion of the M. S. P. was taken Sunday the 11th, to New Street Quarries, Paterson N. J., thru the courtesy of the Consolidated Stone and Gravel Company of Upper Montclair. The announcement of this occasion was received by our members with much gratification, in anticipation of being able to acquire for themselves some of the very desirable zeolites for which the area has long been noted. Every outstanding mineral collection, within our reach, is made more beautiful and worth while by the addition of their "Paterson Zeolites."

Most of the 101 persons present looked forward to hoped—for rich hauls and were prepared to work hard to secure them. Many succeeded in getting specimens of prehnite, pectolite and a few other varieties in smaller quantities. Some considerable excavations were developed in following promising veins and vugs. The one of the Jennings family became quite a "cave" before work was halted. Mr. Russ De Roo, of Butler, host for the day, displayed a case of superb Paterson mineral specimens calculated to act as a wholesome tonic for our "Miners". A light shower shortly after noon did little however, to interrupt the activities. Every one seemed to get something, more or less, to add to their collections.

October Field Excursion of Pennsylvania

The October Field Excursion was taken Sunday the 9th to the old dumps of the French Creek Iron Mines at St. Peters, Chester County, Pa.—193 members and friends were

M.S.P. field trip to New Street trap rock quarry, Paterson, N. J. Sept. 11, 1955

Photo by Harold Evans

Wilson Jennings (in hole) with son, David. New Street quarry, Paterson, N. J. Sept. 11, 1955

Photo by Harold Evans

present including Tommy Clements six months old on his first field trip. The weather was perfect, making conditions ideal for deep digging which was made necessary by the fact of the mines having been inoperative since 1928, and up to the present hundreds of collectors have carefully combined all the exposed surfaces many times. The second opening of the mine occured in June 1914. From that date to the final closing approximately 800,000 tons of ore were mined and 200,000 tons of rock refuse, the latter item has been the strong attraction for mineral collectors up to the present, and will probably be for considerable time into the future. Small finds of the following species were secured by our M. S. P. workers: Iron pyrites with a fair number of perfect crystals, chalcopyrites, graphite in brilliant flakes up to 3/8 inch. Massive crystalline calcite, white and greenish with more or less byssolite inclusions, small traces of malachite, erythrite, (the hydrous, cobalt arsenate), stilpnomelane (referred to at times as chalcodite). Massive magnetite with laminated structure and some small brilliant crystals, also uralite. French Creek Iron Mines have been much esteemed by amateur mineralogists for almost three generations and they hold warm places in the hearts of many collectors, particularly those who were frequent visitors, when they were operating. Who, among them, does not remember with sincere regard such men as William (Billy) Madern, the hospitable Cornish superintendant, M. T. Hoster, Harvey Keim and Mr. Ash, watchman and constable, one time circus strong man? Trees and shrubs have changed the appearance of the place, almost beyond recognition. Every one seemed to enjoy the occasion in one way or another.

Harry W. Trudell, Publicity
1309 Highland Ave.,
Abington, Penn.

North Jersey Mineralogical Society

A display of new mineral specimens collected during the summer was presented by members of the North Jersey Mineralogical Society as it opened new season activities with its September meeting in Paterson Museum.

A new source of minerals in Paterson itself developed during the summer when excavations for a water-diversion tunnel in the Hillcrest area heaped tons upon tons of shattered mineral-bearing traprock into a huge dump. The minerals were largely zeolites, but slightly different in aspect from the historic zeolites formerly taken from the New Street quarries in Paterson and from nearby Prospect Park. Accessory minerals were barite, a few metallic sulphides and relatively small amounts of quartz and calcite. A list of some 25 different

M.S.P. field trip to French Creek iron mine, Penna. Sept. 9, 1955

Photo by Harold Evans

minerals from Hillcrest has been compiled. even though most of them are small and far from spectacular.

Gene Vitali exhibited good-sized and excellent specimens of satiny white pectolite, pale green prehnite, barite intermixed with calcite and pale greenish datolite with brilliant crystal faces, all from Hillcrest.

From the Prospect Park quarry he had a large specimen of chalcopyrite, only slightly smaller than ordinary brick. He said this was sawed from a 25-pound find made during the summer by somebody else. Vitali had sawed the piece into several slabs for the owner. Chalcopyrite has always been found among the zeolites in small amounts, a tiny crystal here and there, or coating less than an inch long, but this summer's find in comparison was enormous. Vitali also showed a prehnite specimen from Prospect Park, quite different from that from Hillcrest.

Paul Moore displayed some Hillcrest prehnite, both green and white; a natrolite ball which had lost its delicate terminal crystals in blasting of the trap; and interesting specimens of prehnite-datolite and datolite-prehnite.

Russ DeRoo said he had been collecting at Hillcrest but that his specimens were not outstanding. He showed some excellent zeolite minerals from Centerville, Virginia, which he had acquired in trade. The basic mineral of all of them was green prehnite, beautiful in itself. One specimen was completely covered with fine, hair-like byssolite; one had the byssolite partly enclosed by the prehnite. and one showed thaumasite making a pattern in white on the prehnite. Other minerals shown by DeRoo were Herkimer "diamonds" from Middleville, N. Y., halite from California, apophyllite with magnetite from Cornwall, Penn., and brown garnet crystals from Franklin, N. J., which he had worked out of the calcite.

Wesley Hayes showed minerals from a traprock quarry at Bernardsville N. J. He had two good-sized pockets or geodes of quartz and calcite crystals with inclusions and coatings of hematite. From Portland, Conn. he had columbite in albite with fluorescent manganapatite. A copper mineral from Bound Brook, N. J. was basic chalcocite with chrysocolla and aurichalcite. He had collected pyromorphite (and a bad case of poison ivy) at the historic mine in Phoenixville, Penn.; chalcophanite with hydrohetaerolite from Ogdensburg, N. J., and had received a specimen of pisanite, a copper sulphate, from Arizona.

William Casperson, curator of Paterson Museum, showed several radioactive minerals which had been brought to him during the summer. Most of these were from New Jersey with a few from nearby spots in New York.

With a Geiger counter he demonstrated the comparative richness of uranium content in the specimens.

The fifteen-minute mineral study period was led by Miss Marie Kuhnen who took Copper as her subject. Miss Kuhnen had made a trip through the West during the summer, had visited the great Bingham Canyon mine in Utah—which keeps getting wider and deeper all the time—had seen the Butte, Montana, copper workings, and had collected copper specimens from traders along the way.

The leader for October will be Alfred Lombaerde.

Marian Brown Casperson,
Publicity Director
9-11 Hamilton Street
Paterson 1, N. J.

The New Jersey Mineralogical Society, Inc.

The first meeting of the 1955-56 season was held at the Plainfield Library on September 6, 1955. Each year this meeting is devoted to the recounting of summer vacation trips by the members.

The principal speaker was Stewart C. Fulton who gave an exciting account of his trip through Utah, using many colored slides to illustrate the mineral areas visited. Fulton exhibited some of the mineral and fossils he collected on the trip, among them many beautiful specimens which he polished on his own equipment.

Neil Wintringham, editor of the "Handbook for a Week With Maine Minerals", told of his short trip to some areas covered in his book. He mentioned that he has had requests for his book from as far as California and Canal Zone.

Many laughs were enjoyed when Oscar Smith told of his trip to Canada in a talk entitled, "Tall tales from our neighbor across the border."

Alexander Knoll told of revisiting with Mrs. Knoll some of the mineral localities in Essex County in the Adirondacks.

A flying trip to the Colorado Plateau in search of Uranium was enjoyed this summer by Peter Bernotas. He told of the friendly treatment afforded him by government officials, mine owners and prospectors in the area. He came home with many fine specimens and most interesting stories from Colorado.

On weekend of the infamous hurricane that hit so hard in the area along the Delaware River, this organization had planned a trip to the Green Marble Quarry in Phillipsburg, N. J. Some nineteen members did make the trip and with the permission of the authorities who were patroling the area, they were allowed to do some collecting at the quarry. A story of the difficulties encountered during that trip were enjoyably told by Joseph Groben who was in charge of the trip.

Our expert on Franklin minerals, William Spencer, told of his trip to and around Bancroft in Canada. Mr. Spencer stressed particularly the many people he met whose friendliness and helpfulness made his vacation as profitable in human relations as in collecting minerals.

The last speaker was fourteen year old Peter Vogt who told with much enthusiasm of rock and fossil collecting in Ohio.

All the speakers stressed the aid which the people they met gave them to enable them to find new and interesting mineral localities.

A social time followed during which refreshments were served.

A large group from the Society enjoyed a perfect day collecting specimens on Sunday, September 25th, at the clay pits in Sayreville, N. J. Many beautiful pyrite balls were unearthed along with many other fine specimens.

October Meeting

On October 3rd, the Society enjoyed as guest speaker, Dr. Kemble Widmer, Assistant to the State Geologist of the State of New Jersey. One of the highlights of the meeting was Dr. Widmer's display of a large geological map of New Jersey with rocks representative of each formation connected with ribbons to the map.

Dr. Widmer explained the various stages in geological history in the state and places that different eras could be identified by the rocks present. His talk included the present interest in uranium and he mentioned that is is being found in connection with iron mines.

The present urgency for water supplies was covered by Dr. Widmer who said that well drillers in the state can get reliable information on the depth of water anywhere in the state by contacting the Geology Department of New Jersey. The State also has a number of free maps on Geology and ore resources that can be had for the asking.

It was announced at the meeting that the October field trip will be held in the Limestone Products Co., at Limecrest, N. J. on October 30th.

The Lapidary group of the Society met on October 18th for a sale and exchange of cutting material. This group is going to start to teach lapidary methods to anyone interested in the club.

Leigh C. Thompson,
1668 Oliver St.,
Rahway, N. J.

Stamford Museum Mineralogical Society

During the summer the Stamford Museum Mineralogical Society had an active season despite the heat. At our June meeting we had as guest speaker, Dr. Stenbuck of the New York Mineralogical Club Inc. He lectuded on his expeditions to Mexico using slides—which were exquisite in coloring and artistic photography—as well as many unusual Mexican specimens. Dr. Stenbuck not only described mineral cutting in our Neighbor to the south but also industries, people and

culture as well. This made it a valuable and interesting lecture.

Our July Meeting was held in the home of Alan Kattelle, and was an informal gathering. The weather being hot no business was discussed. Walt Bagley brought a box of specimens which were distributed among the members while beer and soda pop were served by the Kattelles. Both meetings and refreshments were considered a success.

In August we met at our usual place--the Stamford Museum. Mr. Hewitt gave a short lecture on fluorescent minerals and showed some excellent slides of specimens taken under fluorescent light. He also displayed a fluorescent lamp that is portable and, best of all it can be built for about 24 dollars. He and Allan Kattelle took orders for parts so that members could fabricate their own lamps. At the meeting several members told of their collecting experiences in different parts of the nation during the previous two months.

In September David Seaman of the American Museum of Natural History graciously gave a lecture on Pegmatite minerals of the Eastern United States. His lecture was illustrated by a very large collection of Pegmatite minerals—some of which were on loan from the American Museum of Natural History. Almost all of the eastern localities were represented. Tourmalines from Haddan Neck. Conn., Amblygonite from Portland, Conn., and Columbite from Bedford, N. Y., to name only a few. The lecture was informative, giving several valuable tips on how to search for minerals in Pegmatite deposits as well as new and little known localities. Mr. Seaman also went into great detail in describing many of the different minerals, especially minerals containing the rare earth elements.

Julius H. Preston, III
100 Strawberry Hill
Stamford, Conn.

Westchester Mineral & Gem Society

The Westchester Mineral and Gem Society Inc. had its second meeting of the season Oct. 13th. Mr. and Mrs. Joel Halpern gave a very interesting talk on Inter-relationship Between Man and the Geology of Yugoslavia. Mr. Halpern is a past contributor to the R. & M. magazine. Mr. and Mrs. Halpern have first hand information about their topic, as they spent considerable time in Yugoslavia.

At this time, Mr. Halpern is studying for his Doctorate in the field of Anthropology.

Peg Nielsen, secretary
Mohican Pk.
Dobbs Ferry, N. Y.

Gem and Mineral Society of the Virginia Peninsula —Hampton, Virginia

In September the Gem and Mineral Society of the Virginia Peninsula met with the Engineers' Club of the Virginia Peninsula. The meeting featured a talk by Dr. George Switzer, Curator of Mineralogy at the U. S. National Museum. Dr. Switzer spoke on "Gems, Natural and Synthetic". He gave complete details of the three methods of synthesizing gem stones, illustrated by slides. He also showed color slides of some of the gem stones found in the Smithsonian. Also featured at this meeting was a display of mineral specimens and cut stones, given by the Gem and Mineral Society.

A field trip was made on October 9 to Amelia County, Virginia. Amazon Stone, smoky quartz, moonstone, and albite were found. This material was excellent and the collecting was good. October 11th the Society heard a talk by Mr. George B. Hardy of Norfolk of the subject "Diamonds, Their Mining and Cutting". Mr. Hardy gave a complete history of the stones, from the time they are mined until they are set. Of interest is the fact that seventy tons of matrix, called "blue ground", must be mined and processed to obtain one carat of cut diamond. A nine-and-one-half carat diamond, exhibiting perfect octahedral crystalline formation, and worth $2,500 was passed around for inspection.

Mary Ann Kelley
1225-22nd Street
Newport News, Virginia

Mid-West

Chicago Rocks & Minerals Society

Dr. George H. Otto, consulting geologist in Chicago, spoke on "New Slants on Chicago Geology" before the October meeting of the Chicago Rocks and Minerals Society. A large audience heard this informative lecture.

Visitors are welcomed at all meetings of the Society, held the second Saturday of each month in the Green Briar Park Field house.

Dorothy H. Gleiser
1066 Griffith Road
Lake Forest, Ill.
Acting Publicity Chairman

St. Louis Gem & Mineral Society

The St. Louis Gem and Mineral Society held its first "Sell or Swap Day" on Saturday, September 17th in the Lyndall Grosch's back yard. Some members brought rocks, mineral specimens, fossils, baroque and cut stones, carvings, and jewelry that they sold or swapped, while others just came to look and buy.

The displays were set up on card tables and the trading went on from 1:00-6:00 o'clock. Then those who wished to stay ate picnic lunches they had brought. The evening program, a showing of movies and slides of summer rock trips made by the members, concluded a highly successful day.

The St. Louis Club meets regularly at the St. Louis County Library Auditorium on the

first Friday of every month at 7:30 p.m. Guests are welcome.

Mrs. R. M. Edwards,
Publicity Chairman
106 Wildwood Lane
Kirkwood 22 Mo.

Rocky Mountains

Rawlins, Wyo., Convention (June 16-19, 1955)

The Rocky Mountain Federation of Mineral Societies and the Wyoming State Mineral and Gem Society Show at Rawlins, Wyo., on June 16, 17, 18 and 19th, 1955, was one of the most successful conventions ever held by these organizations.

There were 4,500 in attendance over the three day meeting period. The fourth day was for field trips. There were 28 states represented on the register.

There were 53 Non-Commercial Exhibits and 27 Commercial Dealers.

The total number of Delegates and Alternates for the two meetings was 118.

Laramie, Wyoming, was chosen as the site of the Wyoming meeting next year. This meeting will be held early in June before the meeting of the Rocky Mountain Federation which is to be in Rapid City, South Dakota.

Newly elected officers of the State are: William Crout, President; Mrs. Merle Weible, Vice President; and Mrs. Burnese Weible, Secretary-Treasurer, all from the Laramie Rockologist Club, Laramie, Wyoming.

Newly elected officers of the Federation are: W. L. Roberts, President; Ralph Henry, Vice President; and Miss Ermald Cunningham, Secretary-Treasurer, all from Rapid City, South Dakota.

Various speakers were as follows:

Ralph E. Platt, Cheyenne, Wyo., spoke on Wiggins Fork, Wyo., one of the largest petrified forests in the world. He used slides to show the scenic beauty of the area, discussed the geology of the area and showed specimens of wood, fossil cones and crystals found in the area.

Mrs. Leslie Bowser, Bairoil, Wyo., who has collected jade for over 10 years and rocks for over 31 years, talked on the history of jade and its uses since ancient times.

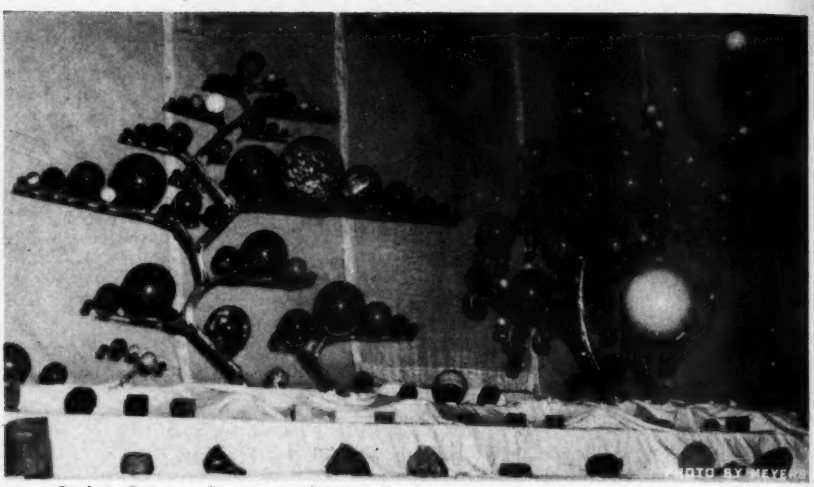
Dr. Paul McGrew, University of Wyoming, Laramie, Wyo., talked on the prehistoric mammals of Wyoming. Illustrated his talk with slides showing where the different skeletons of the animals are found and how they are dug up and preserved. Ages ago dinosaurs, camels, horses and rhinoceroses were in Wyoming.

Dr. Chester A. Arnold, University of Michigan, described the identification of petrified woods and showed slides of photo-micrographs of the various kinds of wood.

Dr. Samuel Knight, head of the University of Wyoming geology department, talked on the Sweetwater-Crooks Mountain area, giving the geological history of the granite mountains located there.

Dr. James E. Barlow, Casper, Wyo., geologist with the Forest Oil Corporation, discussed the Rawlins Uplift. This is the hill

Main floor at Rawlins, Wyo., Convention showing dealers set-ups. (June 16-19, 1955)
Photo by Harold Evans



Paul A. Brostes sphere tree exhibit at Rawlins, Wyo., Convention, June 16-19, 1955.

north of Rawlins known to geologists as a freak because the newest rocks are at the bottom.

Arthur F. Flagg, Curator of the Mineral Museum of Phoenix, Arizona, showed color slides of micro mounts to illustrate his talk on minerals.

Outstanding exhibits were as follows:

Paul A. Broste, Parshall, North Dakota, had sphere trees made of natural stones, cut into spheres and ground, sanded, polished and mounted on metal tree forms about six feet high. There were approximately two hundred spheres.

Ralph E. Platt, Cheyenne, Wyo., had a partial display of his collection that won first prize in the national show two years ago. Including jade, petrified woods and minerals.

B. J. Keys, Worland, Wyo., displayed sand concretions, dinosaur gastroliths and fluorescent materials. The sand concretions with the addition of chalk and pencil marks represent human figures, animals, birds and fruits.

Field trips were as follows:

Jade fields, Turritella beds and Delany Rim, Medicine Bow Petrified Forest and Specimen Hill.

Mrs. Bernice East,
Corresponding Secretary
Rawlins Rockhounds
Box 158
Rawlins, Wyoming.

West

Los Angeles Mineralogical Society
Los Angeles, California

Speaker at the meeting of the Los Angeles Mineralogical Society was Dr. P. A. Goster, Past President of the Society. His subject was "California: The State We Live In", and was highlighted by interesting and beautiful colored slides.

He stated that the Mohave Desert is considered that part of the western desert lying within the boundries of California, an arid region of 30,000 square miles.

Twelve million years ago, this area was said to be a sea of salt water, as well as the rest of California and the mountains represent two upheavels, one chain of mountains upon another.

From a geological standpoint, the San Andreas Fault is one of the most interesting spots in North America. It extends for over 600 miles from the Bay at San Francisco to below the Mexican Border. It was the restlessness of this fault that accounted for the Santa Barbara, Inglewood and San Francisco earthquakes, and thousands of lesser movements since that time. Elizabeth Lake is the result of one of these.

Red Rock Canyon is a beautiful canyon of erosion forms, through which an ancient river was said to pass, parallel to the Colorado. This is a great fossil hunting area. Gold was carried down the old beds, some of which can be placered in small amounts to this day. The red sandstone is colored by ferrous oxide and erosion has chiseled out many grotesque and weird forms. These are sedimentary rocks, faulted and tilted, showing rock structures of the earliest period in geological history.

Evalyn Cherry, Publicity
L. A. M. S.
4113 Garthwaite Ave.
Los Angeles 8, California

Canal Zone

Canal Zone Gem & Mineral Society

At long last it gives me great pleasure to inform my friends that the long desired mineral society here in the Zone has at last become a reality with the organization of the Canal Zone Gem and Mineral Society on Friday, August 26, 1955.

Mrs. Mary Worley was elected secretary-treasurer, Mr. L. H. Stroup, vice-president and yours truly president. The Society's postoffice address is Box 629, Balboa, C. Z. Meetings are held on the fourth Friday of each month at the public Diablo Clubhouse, until we can secure a club of our own, for which we are presently negotiating.

The welcome mat will always be out to any visiting collector and if notified in advance of a prospecting visitor we will endeavor to extend him every courtesy, with a positive guarantee that he will not leave empty handed.

Burton E. Davis
Box 1181
Cristobal, Canal Zone

Canada

Thunder Bay Mineralogy & Lapidary Society

On Sunday August 21st, 1955, thirty-two members and friends of the Thunder Bay Mineralogy and Lapidary Society took another trip to the islands off Rossport (a little town in Ontario and on Lake Superior).

It was a beautiful sunshiny morning as the trusty Tug, Ronald L., left dock at ten minutes after eight o'clock. The majority were seated on boxes, in the stern of the tug, engaged in pleasantries, as we watched Rossport slowly merge into its background and eventually fade from view.

It's a pretty little hamlet is Rossport; nestled along the shore with the mountains rising immediately behind It. The hotel and cabins are painted white; also the filling station and fish shop which are situated a little farther up the hill. It has a little church; a few dwellings, and although I have never seen the Station, there must be one as it is situated on the Canadian Pacific Mainline. There are two docks. On one there are racks upon which the fishermen dry their nets. Here and there, dotted on the Bay, you will see small craft riding at anchor. An atmosphere of restfullness prevails.

By nine o'clock a rain cloud cast forth its contents and we were forced to scurry for shelter, wherever it was to be found.

Our first port of call was the South side of Copper Island. It was still drizzling rain, but the lure of the agate is great, so we climbed into the dinghy and headed for shore. We combed the beach for an hour, but few stones of value were found.

Our next port of call was Simpson Island. By this time the rain had ceased and the sun was shining brightly. While we searched for agates, Captain Legault and his brother, the Engineer, carried all the lunch baskets ashore. And when they had brewed two kettlefuls of tea, called us to, "come and get it". A trip on Lake Superior can certainly whet the appetite. We ate until we were almost bursting at the seams. We packed the dishes, and what little was left, in our baskets, and left them—going in search for more stones. When we returned to where the tug was anchored we found that Captain Legault and his brother had gathered up the baskets and taken them on board. When noses were counted and we were ready to bid farewell to Simpson Island, the Captain discovered that we were again stuck in the mud. After considerable manoeuvring we were freed and on our way, heading for MacKay Harbour.

We arrived at twelve-thirty o'clock. The tug stopped alongside a massive pile of rock. The Engineer clambered ashore with a tow-line that he fastened around a jutting rock, then he assisted the passengers to disembark. The agates were embedded in the rocks in layers and had to be chiselled out. They were coral in colour and beautiful. Some of the members climbed down to a small gravel beach that joined another mass of rocky shore line to the rock where our boat we moored. The beach would be approxiamtely thirty feet wide, and joined the two masses of rock in form of a small letter H. Some very good specimens were found.

During our stay of an hour and a half, the Captain told me that the rock was a nesting place for sea-gulls. There were several dead gulls on the island, and he stated that that was unusual, and wondered what could have happened to them.

When it came time to leave, Doctor Wenger could not find his knapsack. He, and one of two others, searched high and low, but it was not to be found. They embarked again and we left for Greenstone Beach.

There were three beaches on the Island. One beach was being washed by the waves. About eight feet higher up was a second beach, and approximately eight feet higher than that was the third beach. The waves must have been mountainous to have deposited so much gravel on the third beach. It was a Rockhound's paradise. Some very good specimens of greenstones were found. Also agates. We combed the beach for an hour and then returned to MacKay Harbour.

This time the tug was moored to the opposite rocky shore, (on the small downward stroke of the letter h). Doctor Wenger found his knapsack on the beach. A further search for agates was made, and again some good specimens were found. About four o'clock

Captain Legault blew the whistle, and one by one, weary of limb, we climbed up over the rocks again and aboard the tug.

When we were about to set sail we discovered that Paul Miller was missing. The Captain gave a warning blast of the whistle and then we waited. Another warning blast and more anxious waiting. We knew he could not get lost on that island—it was barren of vegetation; but he could have slipped on a rock and injured himself. However, ere long we saw his blonde hair capping the top of a rock like a mushroom. He had stopped to dislodge an agate that he just couldn't leave behind.

We left MacKay Harbour at four-thirty o'clock. The trip in was rather rough, but we made good time. We docked at six o'clock.

We were tired but happy. We had spent another wonderful day.

Beatrice Gilby, Secretary
264 Ray Court,
Port Arthur, Ont., Canada

Misses his money but R & M more!

Editor R & M:

I hate to see a dollar leave,
It makes me cry and deeply grieve,
But not for "Rocks and Minerals" mag,
There's nothing better when interests sag.

Winston Gold
40-24—167th St.,
Flushing 58, N. Y.

July 21, 1955

Wants 100 R & M a year—Wow!

Editor R & M:

A year ago I sent for a sample copy of R & M, that sure started me off as now I am a regular subscriber. My neighbors call me a curio collector. I am an old sailor (Marine Engineer), have over 1000 sea shells, Indian relics, pistols, guns, fish, butterflies, moths, nearly 100 minerals, Lord Knows what else. I wish there were 100 R & M magazines a year, I'd read them all.

Ben Brown
Curio Collector
Wingdale, N. Y.

Oct. 26, 1955

Appreciative of R & M.

Editor R & M:

I continue to look forward to each issue like a small boy does to recess and want to thank you for the fine work that you are doing.

S. A. Dulany Hunter
6408 Brookside Drive
Kenwood, Chevy Chase 15,
Maryland

Oct. 24, 1955

LOUIS BOYER BENTLEY

(Obituary Notice)

Louis Boyer Bentley, the Grand Old Man of the Organ Mining District, 14 miles northeast of Las Cruces, New Mexico, passed away on the morning of August 18, 1955, at his home in Organ. Mr. Bentley was eighty-six years of age and is survived by his widow, a daughter, two grandchildren and six great-grandchildren.

Born in Chicago, he early became interested in chemistry, and was an adept student in that field. In early life he engaged in lumbering and in mining in Colorado and vicinity. Early in the century he came to Las Cruces, where he became the operator of the commissary at the Modoc lead mine in Modoc Canyon in the central-western Organ Mountains. In 1903 he established an assay office and general store at Organ, and was the genial friend of the some two thousand persons who resided there when the community was at its peak of importance.

Organ dwindled eventually to near ghost-town status and some twenty years ago U.S. highway No. 70 was relocated, leaving the Bentley store about five hundred feet from the travelled way. The store continued, however, to serve the community and a limited transient trade. In 1950 the assay office and the magnificent Bentley mineral collection were sold, but Mr. Bentley continued the operation of the store and was always ready to spend time talking minerals and mining with miners, prospectors, and rock hounds.

Always jovial, he not long ago laughingly admitted to me that should anyone desire a supply of celluloid collars and cuffs or a rubber necktie, he felt sure that he could find some tucked away in his ancient stock of goods, and pointing to a rather ancient type food chopper hanging on the wall, pseudo-seriously stated that it was not what it appeared but rather an Indian scalping tool.

Since the establishment, about twelve miles distant, of White Sands Proving Ground, Organ has shown material growth and now numbers some three hundred inhabitants, mostly trailer residents. As a result of this Organ a few years back obtained electric power and Mr. Bentley took a great deal of pleasure from the benefit of electric lighting in his store and adjoining home.

Although he had long been "off the beaten track" Mr. Bentley will be well remembered by thousands of those who in times past worked at the Memphis, the Torpedo, the Modoc, the Stephenson-Bennett, and dozens of nearby less-important mines as well as by thousands who may not have known him by name or reputation but merely as the kindly old storekeeper in that little passing-by community near San Augustine Pass on Highway 70.

Don Alfredo

Aug. 22, 1955

IT CAN HAPPEN TO YOU!

Be friendly with collectors!

What is believed to be the largest beryl crystal ever to come out in one piece from New York is owned by the Editor of R & M. The crystal is 11x15x19 inches in size, weighs 229½ lbs., and has one good termination and three good faces.

It is light green in color and slightly gemmy in places. The crystal was mined around 1910 by the original Kinkel quarry operators and because of its good form was preserved by the Kinkel family until it passed into the hands of the Editor on Fri. June 1st, 1934.

The Editor had been on one of his regular trips to the Kinkel feldspar quarry which with others was then in operation (at Bedford, Westchester Co., N. Y.), and being a friendly individual he was busily exchanging greetings and comments with the many collectors present (this visit was made Sun. May 27). One of the collectors present was Leo Neal Yedlin, of New York City (now of New Haven, Conn.), who casually remarked about seeing an unusually fine large beryl crystal at the Kinkel homestead. It was for sale, (and cheap too) but nobody wanted it on account of its large size, continued Mr. Yedlin. Out of curiosity the Editor wanted to see the crystal and Mr. Yedlin graciously led him to it (the Kinkel estate adjoined the quarry property); the crystal was found still standing by the barn where it had been placed in 1910. The crystal was such a fine one that the opportunity to buy it could not be passed up and so a deal was soon made with a member of the family (a Miss Kinkel) and on the following Friday the Editor, accompanied by Emmet Doherty (then of Peekskill but now of Kingston, Penn.), came to take the crystal away.

Moral: Be friendly with collectors at all times—one of them may tip you off to a good buy!

Good specimens staring us in the Face!

A few years ago I visited the Edison iron mine in Ogdensburg, N. J. As this mine has not been worked in many years, the pickings were not too good.

About noontime I decided to have lunch. We had our cars parked along a dirt road, and as I sat down I noticed some chunks of what looked like massive magnetite, but which turned out to be franklinite. It had been used as fill for the road. Out of curiosity I cracked open a piece and lo and behold it was full of bright red zincite. I gathered about forty pounds of the material and when I arrived at home I chipped off the weathered crust and had some fine specimens. I traded most of these specimens with a school of mines out West. This material came from the famous zinc mine which was near by, at Franklin.

Moral: So you see while we were hard at work exploring the poor dump piles, good specimens were staring us right in the face—right where we were parked—waiting to be picked up.

Vincent Giordano
29 Cross St.,
West Orange, N. J.

JUST ONE MORE LOOK, PLEASE!

Saturday, Sept. 17, 1955, my husband, little boy and myself went rock hunting between Cheyenne and Laramie, Wyoming. We had been rock hunting at this same place once before for a short time, and I was determined to return when I had more time.

I had originally found some queer, pink rocks which looked like petrified coral which I believe now could very well be. Anyway, on the second trip, I hunted all over the territory and didn't see anything as exciting as the first time.

My husband and Kurt had already headed for the car when I decided to have one last look around.

There at my feet was a petrified sea shell beautifully formed and in perfect condition. It was the inside of the shell with colors and all.

I yelled at my husband, "Look what I

(Continued on page 630)

Publications Recently Received

Convery—Field Guide to Gem & Mineral Locations in North-East U.S.A. (complete with maps and data). By J. Norman Convery, 20 pages, illustrated. Published by International Gem Corp., 15 Maiden Lane, New York, N. Y., $2.00

This new publication contains information on Franklin and Sterling Hill, N.J., along with maps on the very best mineral locations within a 100 mile radius of New York City, also some basic information on crystals, folds, faults, etc. by J. Norman Convery, C.E., 1955.

Accompanying this very interesting publication was the following letter (dated Aug. 10, 1955) from Arnold B. Pritcher of the International Gem Corp.:

"Enclosed please find a copy of our newest publication "The Field Guide to Gem and Mineral Locations in Northeast U.S.A."

"This is a book which we have compiled together with Mr. J. Norman Convery an engineer and avid collector and gemologist in our area.

"We have both felt the very strong need to give rock hounds on the east coast some definite information and stimulation in finding gem material nearby.

"The book is more or less self-explanatory and I believe is a step in the right direction in making available to rock hounds detailed maps and information slanted to the layman on gem materials and where to find them.

"We hope in the future to expand this book to include as many new locations as practical, and think that the idea would be worth your readers' notice.

"The retail price of this book is $2.00 and represents a sincere effort to just recover our costs in putting this out.

"We hope that you will feel as we do, that your readers will be interested in this book, regardless of the areas that they live in, and we feel that publications of this type will promote good will and recruit new fans to our hobby by bringing the whole field closer to home."

Stokes-Varnes — Glossary of selected geologic terms. By Wm. Lee Stokes and David J. Varnes. 165 pp., 6¼x9¼. Published by Colorado Scientific Society, P.O. Box 688, Denver, Colo. $3.50

This volume is primarily intended to provide civil engineers and specialists in related fields with a compact glossary of terms found in the speech and writings of geologists. It is a technical rather than a popular glossary. Where accuracy demands, scientific and technical terminologies have been used, but jargon of the science has been avoided so far as possible. Some degree of familiarity with basic geologic terms will perhaps facilitate the use of this glossary, although every effort has been made to see that terms critical to a definition are themselves defined elsewhere. The style is semi-encyclopedic, with some digressions into geologic processes, occurrence and uses of minerals and rocks, their engineering significance, and other matters, which, perhaps superfluous to a geologist, may nevertheless prove interesting and useful to non-geological users.

The glossary contains about 2670 entries. Only the most general and elementary terms in mineralogy and paleontology are included.

Shaub—Minerals and Rocks Calendar

By Benjamin M. Shaub, Ph. D, 159 Elm Street, Northampton, Mansachusetts, Volume 1, 1956, 128 pp., 56 figs. 6 x 8½, Photographed, Edited and Published by the author. $1.50 plus 8 cents for Postage.

The Minerals and Rocks Calendar for 1956 (Vol. 1) is an attractive engagement type calendar that features 56 full page pictures of minerals, rocks, famous mineral deposits and historic sites of the mineral industry with explanatory notes under each picture.

There is a calendar page for each week and each page is ruled for each day of the week. Ample space is supplied for notes and extra pages for addresses and memoranda are included. It is wire O bound so as to lay flat when opened. The calendar is packaged in a box suitable for mailing.

It is recommended to anyone interested in rocks and minerals.

H. V. Hamilton

California Publication

A new, comprehensive bulletin entitled GEOLOGY OF SOUTHERN CALIFORNIA has just been released by the Division of Mines, Olaf P. Jenkins, Chief of the Division, announced recently.

The book, consisting of some 878 pages of text, 441 text figures, an index map, 60 route maps to selected geologic trips, and 34 map sheets with texts and illustrations, is the product of 103 technical experts—men in academic, industrial, and governmental positions. Compiled and edited by Professor Richard H. Jahns of the California Institute of Technology, the bulletin is essentially a gigantic symposium on the geology of southern California.

Issued as BULLETIN 107 in the Division's series, the book comes in a sturdy cardboard box, 13 inches long by 9½ inches wide by nearly 4 inches thick; inside the box are the

separately bound chapters (10 and preface), 5 road logs, also separately bound, and 34 map sheets. The map sheets are encased in an expanding envelope. The 34 map sheets are by no means all of the maps included in the volume: most of the parts have maps included in pockets in the backs. For example, one large map included in Chapter II is a map showing the geology of the Los Angeles Basin; lithographed in color, it is the only portion of Bulletin 170 that may be separately purchased. The price of the entire volume is $12.00, plus 3 percent tax for California residents. The volume is sent to purchasers postpaid. (Shipping weight is 10 pounds)- Copies may be ordered from the Division's San Francisco office, Ferry Building, or may be purchased over the counter at the San Francisco offices and Los Angeles, Sacramento, and Redding offices—all in California.

Geode Industries enlarges shop

Geode Industries, 411 W. Main St., New London, Iowa, have remodeled and enlarged their shop, with the idea in mind of serving better their many customers. Their letter, dated Sept. 21, 1955, tells us:

"We have remodelled our shop and added 50 ft. of new display tables and we are adding a large stock of New Lapidary Machinery, Mineral Specimens and Gem Materials. We have also expanded our shop to use the entire building which is 95 x 20. We are trying to provide our customers with one of the largest and best selections of Lapidary Equipment, Mountings, Gem Materials, and Supplies in the Middlewest. We hope they will like it."

NOVICE COLUMN

In the Sept.-Oct. 1953 R&M, Gordon ViGario, 2231 Pine St., Bakerfield, Calif. suggested that a Novice Column be opened for rank beginners in mineral collecting. These amateurs, who do not know one mineral from another, may submit their names to the Novice Column.

It is our hope that collectors having duplicates may donate a few specimens to one or more novices who are expected to acknowledge receipt of specimens received and to reimburse each sender for postage paid on the packages. Please print or write plainly the names and localities of all specimens sent novices, and if 2 or more minerals appear on the same specimen, identify each. Remember the novices do not know one mineral from another, so please be as helpful as you can.

The following is the 13th list of novice collectors.

Mrs. R. A. Wardlaw, Box 166, Lockesburg, Ark.

Mr. & Mrs. A. J. Varrin, 403 Idaho, Santa Monica, Calif.

John Hutter (14 yrs.), % Ouray Cafe, Ouray, Colo.

Charles B. Hickman, 1028 Macon Ave., Macon, Ga.

Dale A. Douglas 423 West Simonton St., Elkhart, Ind.

Betty M. Haley, 4345 Jackson St., Gary, Ind.

Walter Brannan, Idana (Clay Co.), Kansas.

Charles M. Schafer, 3129 No. 60th St., Omaha, Nebr.

Ernest E. Brodbeck, 12 Terrace Court, Albertson, L.I., N.Y.

Mrs. R. Douglas, G-3453 Griffith Ct., Flint 7, Mich.

Mrs. Walter Adomeit, 86 Sherwood St., Clifton, New Jersey.

Miss Julia E. Guy (12 yrs.), R.D. #1, Afton, N.Y.

Kathleen Dwyer, Box #36, Keeseville, N.Y.

Larry Dixon, 1889 Windermere, East Cleveland, Ohio.

Mrs. J. C. Matter, 7112 Eastwood St., Phila. 49, Penn.

Alfred A. Wales, 110 Indiana Ave., Providence 5, R.I.

Miss Ramona Wright, R.F.D. #4, Kingston, Tennessee.

Jim Batson, 4610 W. 18th St., Lubbock, Texas.

Larry Lillehammer, 825 Market St., Seattle 7, Wash.

Steven Schuster (12 years) 220 Beaupre St., Green Bay, Wisc.

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The crystals are small (1 to 2 mm), but are so profuse in number that the mineral is clearly visible on each specimen. The specimens are likened to the specularite from Cumberland, England, in their velvet-black appearance.

A very few have geniculated and penetration twin crystals hitherto unknown on natural material. These may be easily seen with any magnifier. Specimens are priced according to their beauty and the amount of plattnerite present.

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PETER ZODAC

Sworn to and subscribed before me this 25th day of September, 1955. My Commission expires March 30, 1957.

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(Continued from page 615)

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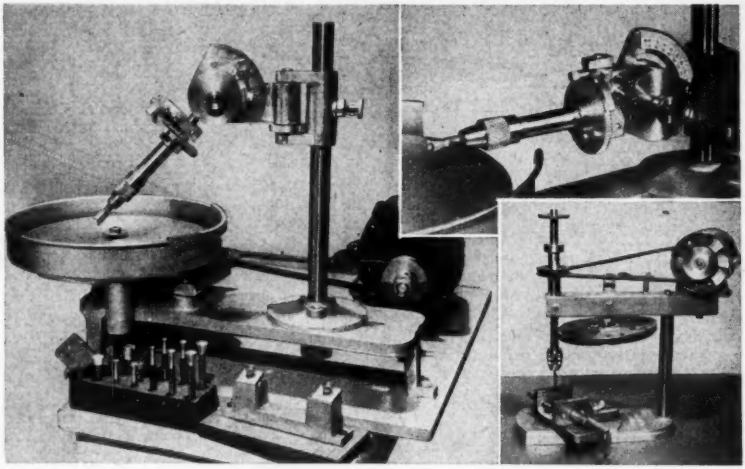

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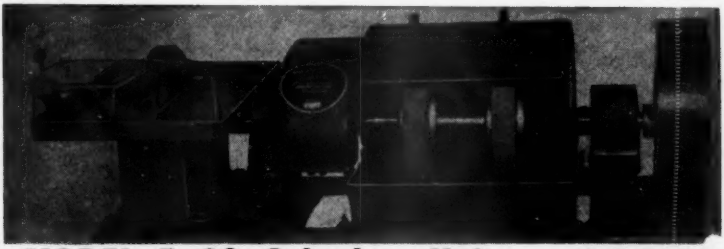

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